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ZOOPLANKTON VOLUMES OFF THE PACIFIC COAST, 1951

SPECIAL SCIENTIFIC REPORT: FISHERIES No. 73

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

Explanatory Note

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Washington, D. C.
May, 1952

United States Department of the Interior, Oscar L. Chapman, Secretary
Fish and Wildlife Service, Albert M. Day, Director

ZOOPLANKTON VOLUMES OFF THE PACIFIC COAST, 1951

Prepared by

The Staff of the South Pacific Fishery Investigations
U. S. Fish and Wildlife Service

Special Scientific Report: Fisheries No. 73

This report contains data on the volume of zooplankton collected on the monthly survey cruises of the California Cooperative Sardine Research Program during 1951. The cruises were numbered XXI through XXXII. Two to four vessels participated in each cruise. Participating vessels include the Horizon (Cruises XXI, XXIII through XXVI, XXXII), the Crest (Cruises XXI through XXXI), and the Paolina T. (Cruises XXVII through XXX) of the Scripps Institution of Oceanography; the N. B. Scofield (Cruise XXI) and the Yellowfin (Cruises XXVI, XXXII) of the California Department of Fish and Game, and the Black Douglas (Cruises XXII through XXXI) of the U. S. Fish and Wildlife Service.

The plankton samples are being collected for the twofold purpose of studying pilchard or sardine, Sardinops caerulea, "recruitment" and the productivity of pilchard spawning areas. The "recruitment" research is being carried out by the U. S. Fish and Wildlife Service; the productivity studies by the Scripps Institution of Oceanography. Both facets of the research are directed toward determining the factors affecting the survival rates of pilchard eggs and larvae.

The nets employed in collecting the plankton samples were constructed of No. 30xxx grit gauze, a heavy-duty grade of silk bolting cloth. The opening between meshes of this grade of grit gauze is approximately 0.65 mm. The nets were conical in shape, 1.0 meter in diameter at the mouth by approximately 5 meters in length.

A similar procedure for taking plankton hauls was followed on all vessels. The hauls were made obliquely from approximately 140 meters deep to the surface (200 meters of wire out at greatest depth) whenever the depth of water permitted. Hauls taken at shallower depths are so indicated in the tables. At all stations, a current meter was used in the mouth of the net to register the flow of water into the net.

At a moderate number of stations, deeper tows were made in addition to the routine ones. Usually at such stations, 600 meters of wire was payed out and retrieved. The data for such hauls are grouped together on the last page of the following tables.

In determining plankton volume, the plankton was separated from its preserving liquid by filtering, allowed to drain, and then its volume was determined by displacement. Consequently, the volume measured is "wet" volume.

In the following tables the plankton volume is given under four headings: (1) Total displacement volume of plankton taken, (2) volume of "smaller" organisms remaining when jelly masses, large mollusca, fish, larger squid, and the like, were removed, (3) total volume standardized in the amount present in 1000 cubic meters of water, and (4) a similar value for the smaller organisms.

For each haul are given also the location, date and time of collection, and volume of water strained in obtaining the haul. The volume of water strained was determined from current meter readings for all values except the few enclosed by parentheses, for which reliable current meter data were lacking. For the latter, an approximate value was obtained which represented the average performance of the current meter at the speed at which the hauls in question were taken.

Inasmuch as plankton samples vary greatly in composition, a small sample composed predominantly of crustacean plankton may actually represent more potential food material than a large sample composed largely of jelly-like organisms, such as salps. This fact should be kept in mind when using these data.

These investigations are part of the California Cooperative Sardine Research Program, a program sponsored by the Marine Research Committee and being carried out by the Scripps Institution of Oceanography, the California Department of Fish and Game, the California Academy of Sciences, the Hopkins Marine Station of Stanford University, and the South Pacific Fishery Investigations of the U. S. Fish and Wildlife Service.

Plankton Volumes, Cruise XXI, January 1951
Lines 60 through 87
Data taken on Calif. Fish & Game vessel "E.B.Scofield"

Position			Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M. strained	
		(1951)				Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start End	C.M.	cc.	cc.	cc.	cc.
0.60	37°37'	123°37'	I-29	1126 1151	771	48	48	62	62
0.70			Not occupied						
0.80			Not occupied						
0.90			Not occupied						
1.55	37°37'	123°07.5'	I-29	0519 0545	551	939	87	1074	158
3.57	37°12'	123°00'	I-28	2350 0015	781	194	194	249	249
3.67	36°49'	123°41	I-28	1745 1808	664	550	550	828	828
7.55	36°39'	122°26'	I-28	0404 0426	1114	1893	1775	1700	1594
7.65	36°15'	123°14'	I-28	1041 1106	859	2605	65	3032	76
0.55	36°03'	122°02'	I-27	2056 2121	827	176	176	213	213
0.60	35°53'	122°23'	I-27	1641 1704	765	120	120	157	157
0.70	35°28'	123°07'	I-27	0858 0925	868	1040	1040	1199	1199
0.80	35°10'	123°49'	I-27	0222 0246	632	165	165	261	261
0.90	34°53'	124°30'	I-26	1817 1842	758	250	250	330	330
3.51	35°35.5'	121°20'	I-24	0538 0601	715	76	76	106	106
3.61	35°18'	122°05'	I-24	1205 1230	912	54	54	59	59
7.55	34°57'	121°20'	I-23	2247 2311	709	375	375	529	529
7.65	34°34'	121°55'	I-24	1828 1852	759	290	290	382	382
0.55	34°19'	120°48'	I-23	1455 1520	704	15	15	21	21
0.60	34°09'	121°09'	I-24	0116 0139	792	90	90	114	114
0.70	33°47.5'	121°49'	I-25	0806 0829	774	58	58	75	75
0.80	33°25'	122°30'	I-25	1427 1451	841	380	380	452	452
0.90	33°09'	123°13'	I-26	0002 0026	800	953	953	1191	1191
0.100			Not occupied						
0.110			Not occupied						
0.120			Not occupied						
0.130			Not occupied						
3.55			Occupied. No biological data taken.						
3.60	33°34'	120°45'	I-22	0030 0056	(805)	143	143	178	178
3.70	33°14'	121°27'	I-21	1755 1819	868	119	119	137	137
3.80	33°00'	122°20'	I-21	0939 1005	861	118	118	137	137
3.90	32°34.5'	122°40'	I-21	0229 0252	800	225	225	281	281
7.35	33°50'	118°37.5'	I-18	2325 2353	893	35	35	39	39
7.40	33°40'	118°58.5'	I-19	0510 0535	769	54	54	70	70
7.50			Occupied. No biological data taken.						
7.60	33°00'	120°21.5'	I-19	1917 1940	674	84	84	125	125
7.70	32°37'	121°02'	I-20	0444 0509	722	2310	19	3199	26
7.80	32°22'	121°45'	I-20	1300 1326	957	880	880	920	920
7.90	31°59'	122°24'	I-20	1932 1957	732	1048	38	1432	52

Plankton Volumes, Cruise XXI (continued)
Lines 90 through 107. Data taken on Scripps' vessel "Crest"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M. strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.org cc.
90.30	33°23.7'	117°52.7'	I-19	1101	1126	714	24	24	34	34
90.37	33°11'	118°23.4'	I-18	0951	1016	700	33	33	47	47
90.45	32°56.8'	118°56'	I-18	0521	0546	714	77	77	108	108
90.53	32°38.5'	119°29'	I-18	0030	0056	757	404	404	534	534
90.60	32°23.5'	119°53.5'	I-17	2011	2036	750	93	93	124	124
90.70	32°06'	120°42.5'	I-17	1236	1301	721	116	116	161	161
90.80	31°40'	120°55'	I-17	0826	0851	774	330	330	426	426
90.90	31°21.1'	121°43.2'	I-17	0251	0316	791	1125	1125	1423	1423
90.100	31°03'	122°31.5'	I-16	2121	2146	753	183	183	243	243
90.110	30°44.2'	123°20'	I-16	1556	1621	714	450	450	630	630
90.120	30°25.9'	124°04.4'	I-16	0836	0901	745	32	32	43	43
93.30	32°49.3'	117°32.5'	I-19	1541	1606	750	42	42	56	56
93.40	32°29.9'	118°11.7'	I-19	2126	2151	709	60	60	85	85
93.50	32°09.2'	118°57.1'	I-20	0351	0416	753	1095	1095	1454	1454
93.60	31°49.9'	119°40.5'	I-20	1021	1046	714	604	604	846	846
93.70	31°32.8'	120°15'	I-20	1521	1547	834	64	64	77	77
93.80	31°12.1'	120°55.1'	I-20	2141	2206	724	69	69	95	95
93.90	30°49.9'	121°35.1'	I-21	0311	0336	744	97	97	130	130
97.32	32°11'	117°11.2'	I-22	1906	1931	775	58	58	75	75
97.40	31°56'	117°50'	I-22	1416	1441	765	182	182	238	238
97.50	31°31'	118°21.2'	I-22	0901	0926	753	74	74	98	98
97.60	31°12'	119°04.4'	I-22	0321	0346	742	29	29	39	39
97.70	30°53.7'	119°47.8'	I-21	2151	2216	771	30	30	39	39
97.80	30°34'	120°34.5'	I-21	1531	1556	793	44	44	56	56
97.90	30°11.8'	121°16.9'	I-21	0846	0911	750	37	37	49	49
100.30	31°40.3'	116°46.5'	I-13	1011	1036	837	16	16	19	19
100.40	31°21.6'	117°28.9'	I-13	1607	1631	719	61	61	85	85
100.50	31°02.5'	118°12.8'	I-13	2206	2231	750	59	59	79	79
100.60	30°43.5'	118°56.2'	I-14	0431	0456	744	43	43	58	58
100.70	30°23.9'	119°40'	I-14	1101	1126	725	22	22	30	30
100.80	29°59.2'	120°09'	I-14	1547	1611	708	49	49	69	69
100.90	29°40.7'	120°47.2'	I-14	2136	2201	749	23	23	31	31
100.100	29°20.4'	121°27'	I-15	0311	0336	735	26	26	35	35
100.110	29°00.5'	122°06.1'	I-15	0841	0906	747	23	23	31	31
100.120	28°40.5'	122°46.1'	I-15	1612	1636	732	22	22	30	30
103.40	30°44.6'	117°07.5'	I-11	2056	2121	686	145	145	211	211
103.50	30°32.2'	117°40.2'	I-11	1526	1551	782	35	35	45	45
103.60	30°04'	118°19.6'	I-11	0931	0956	760	29	29	38	38
103.70	29°45.1'	119°03.2'	I-11	0341	0406	814	61	61	75	75
103.80	29°26.8'	119°45.5'	I-10	2131	2156	790	44	44	56	56
105.35	30°37'	116°35'	I-9	1016	1041	796	19	19	24	24
107.40	30°10.5'	116°43.5'	I-9	1512	1536	751	45	45	60	60
107.50	29°50.8'	117°22'	I-9	2106	2131	729	35	35	48	48
107.60	29°31.5'	118°01'	I-10	0321	0346	816	55	55	67	67
107.70	29°09.7'	118°43.3'	I-10	0821	0846	783	33	33	42	42
107.80	28°50'	119°22.5'	I-10	1516	1541	784	11	11	14	14

Plankton Volumes, Cruise XXI (continued)
Lines 110 through 137. Data taken on Scripps' vessel "Horizon"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M. strained	
			(1951)				Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
10.35-A	29°47.5'	116°02'	I-12	1040	1106	812	23	23	28	28
10.35-B	29°47'	116°01'	I-14	0800	0826	753	62	62	82	82
10.40	29°38.6'	116°21'	I-14	1141	1206	793	34	34	43	43
10.50	29°18.9'	117°04.2'	I-14	1806	1832	814	28	28	34	34
10.60	28°56'	117°39'	I-15	0042	0106	818	84	84	103	103
10.70	28°41'	118°20.2'	I-15	0821	0846	682	30	30	44	44
10.80	28°17.5'	118°56.4'	I-15	1431	1456	688	42	42	61	61
10.90	27°56.7'	119°37.9'	I-16	2006	2030	934	85	85	91	91
10.100	27°38.3'	120°22.1'	I-16	0150	0215	787	108	108	137	137
10.110	27°19'	121°05.8'	I-16	0814	0841	851	17	17	20	20
13.35	29°12'	115°39'	I-12	0125	0149	913	46	46	50	50
13.40	29°02'	115°58.5'	I-11	2113	2138	816	54	54	66	66
13.50	28°42'	116°37.5'	I-11	1441	1506	904	25	25	28	28
13.60	28°22'	117°16.5'	I-11	0826	0852	768	18	18	23	23
13.70	28°02'	117°55.5'	I-11	0134	0158	823	35	35	43	43
17.35	28°38.9'	115°17'	I-9	1940	2007	1031	104	104	101	101
17.40	28°32.5'	115°38.5'	I-10	0009	0036	1084	142	142	131	131
17.50	28°15'	116°21.2'	I-10	0716	0741	747	56	56	75	75
17.60	27°48'	116°54.5'	I-10	1329	1356	1055	74	74	70	70
17.70	27°28'	117°37.8'	I-10	1917	1942	840	33	33	39	39
20.35	28°03.1'	114°53.8'	I-19	0133	0145	341	18	18	53	53
20.45	27°43.4'	115°34.4'	I-18	1910	1937	702	24	24	34	34
20.50	27°35'	115°57.3'	I-18	1425	1450	826	8	8	10	10
20.60	27°19'	116°38.3'	I-18	0741	0806	782	53	53	68	68
20.70	26°58.9'	117°11.3'	I-18	0141	0207	681	38	38	56	56
20.80	26°39'	117°45'	I-17	1956	2021	741	30	30	40	40
20.90	26°19.1'	118°20'	I-17	1330	1355	783	38	38	49	49
20.100	25°56.5'	118°54.7'	I-17	0835	0900	750	25	25	33	33
20.110	25°38'	119°34.8'	I-17	0220	0247	716	23	23	32	32
23.40	27°16.3'	114°54.9'	I-19	0804	0829	773	17	17	22	22
23.50	26°55.3'	115°34'	I-19	1432	1457	847	71	71	84	84
23.60	26°36.7'	116°09.6'	I-19	1930	1956	812	31	31	38	38
27.40	26°43.7'	114°28.8'	I-20	1430	1455	805	12	12	15	15
27.50	26°14'	115°09'	I-20	0801	0826	768	59	59	77	77
27.60	26°03.8'	115°47'	I-20	0123	0148	679	26	26	38	38
30.35	26°18.8'	113°48.5'	I-20	2041	2106	740	28	28	38	38
30.40	26°09.2'	114°08'	I-21	0024	0049	745	49	49	66	66
30.50	25°49.5'	114°49.7'	I-21	0622	0648	780	46	46	59	59
30.60	25°30'	115°28.3'	I-21	1214	1239	863	15	15	17	17
30.70	25°08'	116°09'	I-21	1810	1836	838	19	19	23	23
30.80	24°47.5'	116°39.9'	I-21	2326	2351	700	2	2	3	3
33.30	25°53.2'	113°08.2'	I-23	0421	0446	783	46	46	59	59
33.40	25°36.2'	114°42.8'	I-22	2101	2126	813	70	70	86	86
33.50	25°17.5'	114°15.4'	I-22	1612	1636	873	41	41	47	47
33.60	24°55.2'	115°02'	I-22	1020	1045	824	24	24	29	29
37.35	25°06.5'	113°06.8'	I-23	0936	1001	750	12	12	16	16
37.40	24°55.5'	113°33.4'	I-23	1455	1520	814	21	21	26	26
37.50	24°39'	114°06.8'	I-23	1955	2021	786	40	30	51	38
37.60	24°19.4'	114°46.5'	I-24	0206	0231	706	21	21	30	30

Plankton Volumes, Cruise XXII, February 1951
Lines 80 through 105
Data taken on U.S.F&WS vessel "Black Douglas"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M. strained	
							Total	Sm.org.	Total	Sm.org
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
80.55	34°19'	120°48'	II-25	0055	0121	797	693	448	870	562
80.60	34°09'	121°09'	II-24	0700	0725	749	1946	210	2598	280
80.70	33°49'	121°51'	II-24	0154	0220	875	110	64	126	73
80.80	33°29'	122°32'	II-23	1426	1451	784	131	41	167	52
80.90	33°09'	123°13'	II-23	0726	0750	777	127	57	164	73
80.100	32°49'	123°54'	II-23	0016	0041	757	538	478	710	631
80.110	32°29'	124°34.5'	II-22	1639	1705	739	106	46	143	62
80.120	32°09'	125°15.5'	II-22	0816	0841	786	34	34	43	43
80.130	31°49'	125°56'	II-22	0005	0031	757	23	23	30	30
83.55	33°44'	120°24.5'	II-24	1746	1811	758	2462	253	3247	334
83.60	33°34'	120°45'	II-24	1305	1330	843	3433	276	4072	327
87.35	33°50'	118°37.5'	II-18	1116	1139	725	69	69	95	95
87.40	33°40'	118°58.5'	II-18	1511	1536	728	230	108	316	148
90.30	33°24.5'	117°55'	II-18	0445	0511	773	88	88	114	114
90.37	33°11'	118°23.5'	II-18	2050	2116	747	407	97	545	130
90.45	32°54.5'	118°56'	II-19	0222	0246	750	94	94	125	125
90.53	32°38.5'	119°29'	II-19	0745	0811	816	864	50	1059	61
90.60	32°25'	119°57.5'	II-19	1246	1311	777	597	107	768	138
90.70	32°04.5'	120°39'	II-19	1944	2111	840	267	183	318	218
90.80	31°45'	121°19'	II-20	0242	0307	788	131	73	166	93
90.90	31°25'	121°59'	II-20	0846	0910	750	23	23	31	31
90.100	31°04.5'	122°40'	II-20	1456	1521	777	30	30	39	39
90.110	30°44.5'	123°20'	II-20	2036	2101	810	78	78	96	96
90.120	30°24.5'	124°00.5'	II-21	0322	0346	743	58	58	78	78
93.30	32°50'	117°31.5'	II-17	2129	2155	792	125	125	158	158
93.40	32°30'	118°12.5'	II-17	0117	0141	756	145	145	192	192
93.50	32°10'	118°53.5'	II-16	1835	1901	809	738	43	912	53
93.60	31°50'	119°34'	II-16	1232	1256	769	297	89	386	116
93.70	31°29'	120°14'	II-16	0525	0551	766	642	353	838	461
93.80	31°10'	120°54.5'	II-15	2311	2336	733	182	182	248	248
93.90	30°50'	121°35'	II-15	1635	1703	781	30	30	38	38
97.32	See next page									
97.40	31°55.5'	117°50'	II-14	0306	0333	862	226	71	262	82
97.50	31°35.5'	118°30'	II-14	0952	1016	778	63	63	81	81
97.60	31°15.5'	119°10.5'	II-14	1549	1616	784	210	50	268	64
97.70	30°55'	119°50.5'	II-14	2151	2215	859	2758	180	3210	210
97.80	30°35.5'	120°31'	II-15	0350	0416	881	266	266	302	302
97.90	30°15'	121°11'	II-15	1015	1041	740	244	191	330	258
100.30	See next page									
100.40	31°21'	117°27'	II-11	2211	2236	742	250	65	337	88
100.50	31°01'	118°07'	II-11	1550	1616	736	558	39	758	53
100.60	30°41'	118°47.5'	II-11	0950	1014	733	75	75	102	102
100.70	30°20.5'	119°27'	II-11	0340	0406	808	58	58	72	72
100.80	30°01'	120°07'	II-10	2126	2150	747	22	22	29	29
100.90	29°40.5'	120°47'	II-10	1450	1516	846	176	52	208	61
105.35	See next page									
105.40	30°28.5'	116°54'	II-8	2340	0006	778	65	65	84	84
105.50	30°08.5'	117°34.5'	II-9	0611	0636	821	216	102	263	124
105.60	29°48.5'	118°14.5'	II-9	1144	1211	820	46	46	56	56
105.70	29°29'	118°54'	II-9	1750	1815	712	171	85	240	119
105.80	29°09'	119°34'	II-10	2400	0026	802	352	50	439	62
105.90	28°49.5'	120°14'	II-10	0632	0656	766	26	26	34	34

Plankton Volumes, Cruise XXII (continued)
Stations 97.32, 100.30 & 105.35. Lines 110 through 137
Data taken on Scripps' vessel "Crest"

Sta.	Position N.lat.	Position W.long.	(1951) Date	Time (PST) Start	Time (PST) End	Vol. water strained C.M.	Displacement volume Total cc.	Displacement volume Sm.org. cc.	Vol.per 1000 C.M. strained Total cc.	Vol.per 1000 C.M. strained Sm.org. cc.
97.32	32°11.5'	117°17'	II-6	1200	1227	859	38	38	44	44
100.30	31°40.5'	116°46.5'	II-6	1737	1802	727	54	54	74	74
105.35	30°39'	116°33'	II-7	0127	0151	780	73	73	94	94
110.35	29°47'	116°02'	II-9	2001	2026	724	307	117	424	162
110.40	29°36'	116°23'	II-9	2336	0001	724	74	74	102	102
110.50	29°15'	117°04'	II-10	0544	0609	805	46	46	57	57
110.60	28°54'	117°46'	II-10	1117	1141	803	18	18	22	22
110.70	28°37'	118°18'	II-10	1757	1821	724	25	25	35	35
110.80	28°15'	118°57'	II-10	2316	2341	760	41	41	54	54
110.90	27°53'	119°35'	II-11	0506	0532	789	16	16	20	20
110.100	27°31'	120°14'	II-11	1146	1211	774	24	24	31	31
113.35	29°11'	115°38'	II-9	1427	1441	818	23	23	28	28
113.40	29°01'	115°58'	II-9	1026	1051	761	40	40	53	53
113.50	28°41'	116°37'	II-9	0436	0501	(757)	35	35	46	46
113.60	28°22'	117°16.5'	II-8	1102	1126	763	39	39	51	51
113.70	28°02'	117°55.5'	II-8	1727	1751	705	58	58	82	82
117.35	28°41'	115°14'	II-7	1651	1716	728	29	29	40	40
117.40	28°28'	115°38'	II-7	1956	2021	748	68	68	91	91
117.50	28°08'	116°17'	II-8	0106	0130	694	65	65	94	94
117.60	27°47'	116°58'	II-8	0716	0741	716	34	34	47	47
117.70	27°31'	117°29'	II-8	1146	1211	(882)	24	24	27	27
120.35	28°03'	114°54'	II-13	1927	1941	(412)	18	18	44	44
120.45	27°43'	115°33'	II-13	1342	1406	710	42	42	59	59
120.50	27°32'	115°51'	II-13	0936	1021	755	28	28	37	37
120.60	27°13'	116°28'	II-13	0326	0352	745	51	51	68	68
120.70	26°51'	117°07'	II-12	2136	2201	694	43	43	62	62
120.80	26°28'	117°50'	II-12	1526	1551	828	14	14	17	17
120.90	26°13'	118°28'	II-12	0941	1006	736	15	15	20	20
120.100	25°53'	119°06'	II-12	0127	0154	778	17	17	22	22
123.40	27°18'	114°51.5'	II-17	2146	2211	752	87	87	116	116
123.50	26°58'	115°31'	II-18	0336	0401	784	72	72	92	92
123.60	26°37'	116°12'	II-18	0926	0951	785	13	13	17	17
127.40	26°43.5'	114°29.5'	II-19	0326	0351	819	46	46	56	56
127.50	26°23.5'	115°08'	II-18	2126	2151	789	39	39	49	49
127.60	26°03.5'	115°46.5'	II-13	1526	1601	808	10	10	12	12
130.35	26°20'	113°50'	II-19	2326	2351	782	51	51	65	65
130.40	26°10'	114°10'	II-20	0316	0331	766	91	91	119	119
130.50	25°50'	114°51'	II-20	1036	1101	779	12	12	15	15
130.60	25°31'	115°25'	II-20	1617	1641	773	12	12	16	16
130.70	25°10'	116°03'	II-20	2036	2101	826	31	31	38	38
130.80	24°48.5'	116°40'	II-21	0156	0222	817	78	78	95	95
133.30	25°54.5'	113°07.5'	II-22	0906	0928	702	12	12	17	17
133.40	25°33'	113°44'	II-22	0326	0351	743	50	50	67	67
133.50	25°13'	114°21'	II-21	2036	2101	765	52	52	68	68
133.60	24°54.5'	115°01.5'	II-21	1445	1511	861	47	47	55	55
137.35	25°10'	113°04.5'	II-22	1426	1451	807	43	43	53	53
137.40	25°00'	113°23.5'	II-22	1816	1841	819	52	52	63	63
137.50	24°40'	114°01.5'	II-22	2346	0011	794	53	53	67	67
137.60	24°20'	114°39.5'	II-23	0526	0541	780	54	54	69	69

Plankton Volumes, Cruise XXIII, March 1951
Lines 80 through 100
Data taken on U.S.F&WS vessel "Black Douglas"

Position			Time (PST)			Vol. water strained	Displacement volume		Vol.per 1000 C.M. strained	
			(1951)				Total	Sm.org.	Total	Sm.org
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
80.55	34°19'	120°48'	III-23	0652	0716	624	180	48	289	77
80.60	34°09'	121°09'	III-23	0236	0301	635	87	87	137	137
80.70	33°49'	121°51'	III-22	1836	1901	692	61	61	88	88
80.80	33°39'	122°24'	III-22	1227	1251	816	32	32	39	39
80.90	33°15'	123°11'	III-22	0548	0616	963	70	70	73	73
80.100	32°49'	123°54'	III-21	2145	2212	919	152	152	165	165
80.110	32°29'	124°34.5'	III-21	1522	1546	769	177	177	230	230
80.120	32°09'	125°15.5'	III-21	0907	0931	717	54	54	75	75
80.130	31°49'	125°56'	III-21	0222	0246	818	131	131	160	160
85.40	33°57'	119°10.5'	III-17	1317	1341	700	30	30	43	43
85.50	33°37'	119°52'	III-17	0751	0816	772	99	99	128	128
85.60			Not occupied							
85.70	32°57'	121°14.5'	III-16	1256	1321	709	1102	92	1555	130
85.80	32°37'	121°55.5'	III-16	0404	0431	562	29	29	52	52
85.90	32°17'	122°37'	III-15	2103	2126	556	42	42	76	76
90.30	33°24.5'	117°55'	III-17	2135	2201	844	326	206	386	244
90.37	33°11'	118°23.5'	III-18	0241	0306	873	1493	128	1711	147
90.45	32°54.5'	118°56'	III-18	0826	0852	614	26	26	42	42
90.53	32°38.5'	119°29'	III-18	1402	1426	789	1604	254	2034	322
90.60	32°25'	119°57.5'	III-18	1819	1846	850	497	77	585	91
90.70	32°04.5'	120°39'	III-19	0206	0221	470	188	92	400	196
90.80	31°45'	121°19'	III-19	0906	0931	666	280	72	421	108
90.90	31°25'	121°59'	III-19	1502	1526	672	63	63	94	94
90.100	31°04.5'	122°40'	III-19	2040	2106	780	41	41	53	53
90.110	30°44.5'	123°20'	III-20	0251	0316	850	42	32	49	38
90.120	30°24.5'	124°00.5'	III-20	0916	0941	760	19	19	25	25
93.30	32°50'	117°31.5'	III-13	1756	1821	876	220	220	251	251
93.40	32°30'	118°12.5'	III-14	0026	0051	788	320	50	406	64
93.50	32°10'	118°53.5'	III-14	0621	0646	762	476	31	625	41
93.60	31°50'	119°34'	III-14	1232	1256	689	103	103	131	131
93.70	31°29'	120°14'	III-14	1812	1836	698	853	103	1221	147
93.80	31°10'	120°54.5'	III-15	0106	0131	599	133	133	222	222
93.90	30°50'	121°35'	III-15	0646	0711	722	22	22	30	30
97.32	32°11.5'	117°17'	III-12	1722	1746	804	101	57	126	71
97.40	31°55.5'	117°50'	III-12	1206	1231	784	236	96	301	122
97.50	31°35.5'	118°30'	III-12	0456	0521	867	448	73	517	84
97.60	31°15.5'	119°10.5'	III-11	2236	2301	798	345	40	432	50
97.70	30°55'	119°50.5'	III-11	1641	1656	515	14	14	27	27
97.80	30°35.5'	120°31'	III-11	1111	1126	523	32	21	61	40
97.90	30°15'	121°11'	III-11	0041	0107	834	32	32	38	38
100.30	31°40.5'	116°46.5'	III-8	1315	1341	857	52	52	61	61
100.40	31°21'	117°27'	III-8	1950	2016	862	579	79	672	92
100.50	31°01'	118°07'	III-9	0610	0636	860	333	333	387	387
100.60	30°41'	118°47.5'	III-9	1320	1347	858	96	96	112	112
100.70	30°20.5'	119°27'	III-9	2210	2236	854	83	63	97	74
100.80	30°01'	120°07'	III-10	0256	0321	784	32	32	41	41
100.90	29°40.5'	120°47'	III-10	0931	0956	885	25	25	28	28
100.100	29°20.5'	121°27'	III-10	1530	1556	844	15	15	18	18

Plankton Volumes, Cruise XXIII (continued)
Lines 103 through 120. Data taken on Scripps' vessel "Crest"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M. strained	
							Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
103.35	30°54.2'	116°45.1	III-8	0221	0238	596	120	57	201	96
103.40	30°44.0'	117°05.5'	III-8	0621	0637	525	107	51	204	97
103.50	30°27.8'	117°45.5'	III-8	1206	1222	511	47	47	92	92
103.60	30°07.1'	118°23'	III-8	1721	1737	478	28	28	59	59
103.70	29°46'	119°01'	III-9	0016	0032	509	93	93	183	183
103.80	29°24.1'	119°28.2'	III-9	0636	0652	466	26	26	56	56
107.35	30°20'	116°21.8'	III-10	1541	1557	522	19	19	36	36
107.40	30°10'	116°42.2'	III-10	1046	1102	578	35	35	61	61
107.50	29°50.3'	117°22.4'	III-10	0456	0512	517	19	19	37	37
107.60	29°31.3'	118°02.7'	III-9	2311	2327	522	24	24	46	46
107.70	29°13'	118°42.3'	III-9	1711	1727	532	18	18	34	34
107.80	28°55'	119°21'	III-9	1136	1152	545	28	28	51	51
110.35	29°47.1'	116°00.5'	III-13	0950	1007	536	13	13	24	24
110.40	29°36.8'	116°20'	III-13	1326	1342	524	200	14	381	27
110.50	29°16'	116°59.5'	III-13	1856	1912	548	58	58	106	106
110.60	28°55'	117°38.5'	III-14	0121	0137	524	34	34	65	65
110.70	28°34.8'	118°17.8'	III-14	0856	0912	533	40	33	75	62
110.80	28°16'	118°57.5'	III-14	1520	1537	555	18	18	32	32
110.90	27°56'	119°37.5'	III-14	2026	2042	568	22	22	39	39
110.100	27°36.5'	120°17.5'	III-15	0141	0157	549	27	27	49	49
110.110	27°17.2'	120°58'	III-15	0806	0822	553	17	17	31	31
113.35	29°10.2'	115°39.1'	III-13	0346	0402	493	61	61	124	124
113.40	29°00'	115°59'	III-12	2340	2358	493	Sample lost			
113.50	28°40.5'	116°38.6'	III-12	1811	1827	555	79	79	142	142
113.60	28°21.5'	117°18'	III-12	1226	1242	536	61	61	114	114
113.70	25°02.2'	117°57.5'	III-12	0636	0652	534	52	52	97	97
117.35	28°38.1'	115°15.9'	III-11	0342	0355	466	29	29	62	62
117.40	28°27.3'	115°35.1'	III-11	0656	0712	548	24	24	44	44
117.50	28°07.8'	116°15'	III-11	1227	1242	522	17	17	33	33
117.60	27°47.9'	116°55'	III-11	1826	1842	525	65	65	124	124
117.70	27°28'	117°34.5'	III-12	0006	0022	522	38	38	73	73
120.35	28°03'	114°54'	III-18	0144	0154	335	53	53	158	158
120.45	27°41.3'	115°33'	III-17	1941	1957	489	50	50	102	102
120.50	27°31.1'	115°52.4'	III-17	1551	1607	542	38	38	70	70
120.60	27°11.5'	116°31.8'	III-17	0810	0827	509	27	27	53	53
120.70	26°52'	117°10'	III-17	0026	0042	542	24	24	44	44
120.80	26°32.5'	117°48.5'	III-16	1841	1857	518	41	41	79	79
120.90	26°13'	118°27.5'	III-16	1131	1147	524	9	9	17	17
120.100	25°53.5'	119°06.8'	III-16	0456	0512	551	17	17	31	31
120.110	25°33'	119°44'	III-15	2221	2237	546	14	14	26	26
123.40	27°18'	114°53'	III-18	0906	0922	538	62	62	115	115
123.50	26°58'	115°30.5'	III-18	1321	1337	514	11	11	21	21
123.60	26°38.5'	116°09'	III-18	1721	1737	523	19	19	36	36
127.40	26°45'	114°29'	III-19	0956	1012	563	11	11	20	20
127.50	26°24.2'	115°07'	III-19	0521	0537	524	43	43	82	82
127.60	26°03.5'	115°44.5'	III-18	2311	2327	541	11	11	20	20

Plankton Volumes, Cruise XXIII (continued)
Lines 130 through 157. Data taken on Scripps' vessel "Horizon"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 100 C.M. strain	
							Total	Sm.org.	Total	Sm.or
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
130.35	26°14.6'	113°48.6'	III-20	1021	1046	608	10	10	16	16
130.40	26°09'	114°07.3'	III-20	1536	1601	695	15	15	22	22
130.50	25°46.9'	114°47.5'	III-20	2151	2216	673	16	16	24	24
130.60	25°25.9'	115°27.5'	III-21	0351	0416	710	12	12	17	17
130.70	25°10.9'	116°05.2'	III-21	1126	1151	663	10	10	15	15
130.80	24°49'	116°46.5'	III-21	1647	1711	710	12	12	17	17
133.30	25°58.2'	113°00'	III-20	0443	0456	422	30	30	71	71
133.40	25°37.3'	113°42.8'	III-19	2241	2306	681	20	20	29	29
133.50	25°14.6'	114°25.2'	III-19	1651	1716	744	12	12	16	16
133.60	24°52.5'	115°03.3'	III-19	1041	1106	752	10	10	13	13
137.35	25°10.5'	113°04.1'	III-18	1326	1351	726	76	76	105	105
137.40	24°58.5'	113°24.5'	III-18	1747	1811	760	74	74	97	97
137.50	24°40.8'	114°01.7'	III-18	2326	2352	673	50	50	74	74
137.60	24°20.8'	114°39.5'	III-19	0511	0536	714	30	30	42	42
140.35	24°33.6'	112°42.6'	III-14	1546	1611	741	120	120	162	162
140.40	24°26.8'	113°08'	III-14	0901	0926	655	35	35	53	53
140.50	24°12.3'	113°32.2'	III-14	0301	0327	683	15	15	22	22
140.60	23°49.5'	114°13.7'	III-13	2046	2111	735	17	17	23	23
140.70	23°29.2'	114°53.8'	III-13	1501	1526	721	15	15	21	21
140.80	23°10'	115°30.5'	III-13	0751	0816	684	10	10	15	15
143.30*	24°13'	111°56.2'	III-16	1328	1341	402	75	75	187	187
143.35	23°56.3'	112°14.3'	III-16	0921	0947	720	54	54	75	75
143.40	23°47.5'	112°38.2'	III-16	0521	0547	712	32	32	45	45
143.50	23°31'	113°18'	III-15	2321	2346	646	28	28	43	43
147.20*	23°54'	111°04.8'	III-15	0443	0456	428	74	74	173	173
147.25	23°46.3'	111°22.2'	III-15	0734	0800	726	212	212	292	292
147.30	23°37'	111°41'	III-15	1351	1417	813	30	30	37	37
147.40	23°19.1'	112°22.7'	III-15	1701	1727	713	52	52	73	73
150.25	23°13.5'	110°59'	III-10	2336	0001	852	135	135	158	158
150.30	23°03.5'	111°15.5'	III-11	0340	0406	692	74	74	107	107
150.40	22°39.2'	112°02'	III-11	1031	1057	763	85	85	111	111
150.50	22°21'	112°35'	III-11	1921	1947	726	30	30	41	41
150.60	22°04'	113°18.2'	III-12	0115	0141	751	36	36	48	48
150.70	21°37'	113°50.3'	III-12	0731	0756	717	15	15	21	21
150.80	21°21'	114°26'	III-12	1316	1341	731	10	10	14	14
153.20	22°47.5'	110°22'	III-10	1627	1651	715	34	34	48	48
153.30	22°33.5'	110°59.5'	III-10	1033	1058	702	35	35	50	50
153.40	22°10.4'	111°36'	III-10	0401	0426	806	46	46	57	57
153.50	21°49'	112°13'	III-9	2141	2206	762	55	55	72	72
157.10	22°33'	109°23'	III-8	1226	1252	856	228	228	266	266
157.20	22°13'	110°00'	III-8	1746	1813	923	80	80	87	87
157.30	21°52.8'	110°35'	III-8	2256	2321	745	285	285	382	382
157.40	21°31.5'	111°11'	III-9	0615	0641	805	12	12	15	15
157.50	21°13.8'	111°50'	III-9	1236	1301	775	12	12	15	15

* - 100 meters of wire out

Plankton Volumes, Cruise XXIV, April 1951
Lines 60 through 87
Data taken on U.S.F&WS vessel "Black Douglas"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M. strained	
							Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
60.60	37°37'	123°37'	IV-4	0130	0156	675	576	576	854	854
60.70	37°17'	124°21'	IV-4	0846	0911	622	236	236	379	379
60.80	36°57'	125°04'	IV-4	1940	2009	711	154	154	217	217
60.90	36°37'	125°47'	IV-5	0801	0826	763	760	760	996	996
60.100	36°17'	126°30'	IV-5	1558	1623	811	483	119	596	147
60.110	35°57'	127°12'	IV-5	2231	2256	746	139	139	186	186
61.55	37°37'	123°07.5'	IV-2	1815	1841	920	56	56	61	61
63.57	37°09'	122°58'	IV-2	2325	2351	677	496	496	733	733
63.67	36°49'	123°41'	IV-3	1810	1834	772	592	592	767	767
67.55	36°39'	122°26'	IV-3	0542	0607	671	224	224	334	334
67.65	36°19'	123°09'	IV-3	1159	1223	778	450	450	578	578
70.55	36°03'	122°02'	IV-8	1229	1255	607	279	279	460	460
70.60	35°53'	122°23'	IV-8	0729	0754	648	150	150	232	232
70.70	35°33'	123°06'	IV-7	2315	2341	718	252	252	351	351
70.80	35°13'	123°48'	IV-7	1642	1706	723	232	232	321	321
70.90	34°53'	124°30'	IV-7	1024	1049	780	62	62	80	80
70.100	34°33'	125°12'	IV-7	0125	0150	752	123	123	163	163
70.110	34°13'	125°54'	IV-6	1620	1646	773	20	20	26	26
73.51	35°35.5'	121°20'	IV-8	1905	1930	610	151	151	248	248
73.61	35°16'	122°02.5'	IV-9	0035	0101	780	424	424	544	544
77.55	34°54.5'	121°13'	IV-9	1400	1425	748	167	167	223	223
77.65	34°34'	121°55'	IV-9	0804	0828	774	194	194	251	251
80.55	34°19'	120°48'	IV-9	1940	2005	809	104	104	129	129
80.60	34°09'	121°09'	IV-9	2331	2356	818	120	120	147	147
80.70	33°49'	121°51'	IV-10	0734	0759	838	115	115	137	137
80.80	33°29'	122°32'	IV-10	1446	1511	846	30	30	35	35
80.90	33°09'	123°13'	IV-10	2100	2125	738	56	56	76	76
80.100	32°49'	123°54'	IV-11	0305	0331	841	104	104	124	124
80.110	32°29'	124°34.5'	IV-11	0856	0921	762	130	130	171	171
80.120	32°09'	125°15.5'	IV-11	1500	1525	796	58	58	73	73
80.130	31°49'	125°56'	IV-11	2135	2200	785	78	78	99	99
83.55	33°44'	120°24.5'	IV-14	0406	0431	932	182	182	195	195
83.60	33°34'	120°45'	IV-13	2322	2347	886	262	262	296	296
83.70	33°14.5'	121°26'	IV-13	1115	1140	810	68	68	84	84
83.80	32°54.5'	122°07.5'	IV-13	0256	0321	758	57	57	75	75
83.90	32°34.5'	122°48'	IV-12	2015	2041	871	57	57	65	65
87.35	33°50'	118°37.5'	IV-14	1544	1609	827	265	265	321	321
87.40	33°40'	118°58.5'	IV-14	1909	1935	648	143	143	221	221
87.50*	33°20'	119°39.5'	IV-15	0136	0156	584	62	62	106	106
87.60	33°00'	120°21.5'	IV-15	0625	0651	764	113	113	148	148
87.70	32°39.5'	121°02'	IV-15	1258	1323	780	57	57	73	73
87.80	32°19.5'	121°43'	IV-15	1834	1900	795	156	156	196	196
87.90	31°59'	122°24'	IV-16	0154	0219	722	1110	1110	1536	1536

* - 80 meters of wire out

Plankton Volumes, Cruise XXIV (continued)
Lines 90 through 107. Data taken on Scripps' vessel "Crest"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1951) Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.org cc.
90.30	33°24.5'	117°55'	IV-17	1348	1415	846	130	130	154	154
90.37	33°11'	118°23.5'	IV-17	0949	1015	950	42	42	44	44
90.45	32°53.5'	118°54.5'	IV-17	0454	0519	888	143	143	161	161
90.53	32°37.8'	119°27.5'	IV-16	2300	2324	907	155	155	171	171
90.60	32°24'	119°56.2'	IV-16	1800	1825	868	49	49	56	56
90.70	32°04'	120°37.5'	IV-16	1305	1331	899	77	77	86	86
90.80	31°44'	121°18'	IV-16	0727	0752	902	75	75	83	83
90.90	31°24'	121°59'	IV-16	0200	0225	838	248	248	296	296
90.100	31°04.5'	122°40'	IV-15	2047	2111	838	85	85	101	101
90.110	30°45.7'	123°25.5'	IV-15	1451	1516	840	40	40	48	48
90.120	30°24.8'	124°04.7'	IV-15	0800	0825	810	40	40	49	49
93.30	32°50'	117°31.5'	IV-8	2324	2348	818	99	99	121	121
93.40	32°30'	118°12.5'	IV-9	0519	0546	866	109	109	126	126
93.50	32°10'	118°53'	IV-9	1150	1215	736	110	110	149	149
93.60	31°50.2'	119°33.8'	IV-9	1726	1751	745	33	33	44	44
93.70	31°30.2'	120°15'	IV-10	0048	0113	744	105	105	141	141
93.80	31°10.8'	120°56'	IV-10	0535	0601	812	121	121	149	149
93.90	30°51'	121°36.2'	IV-10	1018	1042	750	38	38	51	51
97.32	32°08.7'	117°17'	IV-12	0310	0336	881	95	95	108	108
97.40	31°53'	117°49'	IV-11	2134	2159	726	91	91	125	125
97.50	31°33.8'	118°30'	IV-11	1521	1546	810	33	33	41	41
97.60	31°14'	119°10.5'	IV-11	0918	0943	761	96	96	126	126
97.70	30°54.5'	119°50.2'	IV-11	0354	0419	778	66	66	85	85
97.80	30°35'	120°31'	IV-10	2211	2235	798	54	54	68	68
97.90	30°15'	121°11'	IV-10	1626	1651	755	25	25	33	33
100.30	31°40.5'	116°46.5'	IV-12	0912	0936	750	42	42	56	56
100.40	31°21'	117°27'	IV-12	1411	1437	787	79	79	100	100
100.50	31°01'	118°08'	IV-12	2034	2058	713	182	182	255	255
100.60	30°40.6'	118°48.2'	IV-13	0239	0304	736	76	76	103	103
100.70	30°20'	119°28.5'	IV-13	0957	1021	788	43	43	55	55
100.80	30°00.5'	120°08.5'	IV-13	1659	1724	803	45	45	56	56
100.90	29°40'	120°48.5'	IV-13	2320	2344	796	77	77	97	97
100.100	29°20'	121°28.5'	IV-14	0451	0517	782	32	32	41	41
100.110	29°00'	122°09'	IV-14	1040	1104	800	30	30	38	38
100.120	28°40'	122°47'	IV-14	1647	1712	848	33	33	39	39
103.35	30°55'	116°43.5'	IV-8	0857	0921	668	44	44	66	66
103.40	30°44.8'	117°04.6'	IV-8	0456	0522	762	89	89	117	117
103.50	30°25.8'	117°44.6'	IV-7	2244	2309	709	79	79	111	111
103.60	30°06'	118°25.5'	IV-7	1621	1646	658	94	94	143	143
103.70	29°46.8'	119°06'	IV-7	1057	1121	733	97	97	132	132
103.80	29°27.8'	119°46.2'	IV-7	0512	0541	774	96	96	124	124
107.35	30°19'	116°17.6'	IV-5	1511	1536	836	35	35	42	42
107.40	30°10.5'	116°43.5'	IV-5	2008	2033	777	120	104	154	134
107.50	29°50.5'	117°23.5'	IV-6	0243	0308	696	54	54	78	78
107.60	29°31'	118°03'	IV-6	0935	0959	658	41	41	62	62
107.70	29°11'	118°43'	IV-6	1541	1606	701	34	34	49	49
107.80	28°51.5'	119°22.5'	IV-6	2145	2211	805	75	75	93	93

Plankton Volumes, Cruise XXIV (continued)
Lines 110 through 137. Data taken on Scripps' vessel "Horizon"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
							Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
110.35	29°46.3'	116°00.6'	IV-5	2020	2046	711	45	34	63	48
110.40	29°35'	116°21.6'	IV-6	0024	0051	771	38	38	49	49
110.50	29°12.5'	117°05'	IV-6	0626	0652	760	31	31	41	41
110.60	28°53'	117°42'	IV-6	1131	1156	714	32	32	45	45
110.70	28°36.3'	118°18'	IV-6	1852	1916	650	106	106	163	163
110.80	28°17'	118°56.3'	IV-7	0025	0051	692	52	52	75	75
110.90	27°56.7'	119°35.3'	IV-7	0616	0641	778	15	15	19	19
110.100	27°40.3'	120°17.9'	IV-7	1216	1241	728	29	29	40	40
110.110	27°16.3'	120°55'	IV-7	1821	1848	711	2	2	3	3
113.35	29°18.3'	115°29.3'	IV-5	1409	1436	661	45	45	68	68
113.40	29°07.3'	115°50.5'	IV-5	1041	1107	720	52	52	72	72
113.50	28°46.5'	116°32.8'	IV-5	0439	0506	729	66	66	91	91
113.60	28°25'	117°14.8'	IV-4	2306	2331	654	74	74	113	113
113.70	28°02'	117°55.5'	IV-4	1726	1752	675	56	56	83	83
117.35	28°38.2'	115°15.7'	IV-3	1225	1253	807	52	52	64	64
117.40	28°28.1'	115°36'	IV-3	1656	1722	815	100	100	123	123
117.50	28°06.8'	116°14.6'	IV-3	2301	2326	750	112	112	149	149
117.60	27°46'	116°49.8'	IV-4	0506	0531	651	47	47	72	72
117.70	27°27.3'	117°32.1'	IV-4	1102	1126	681	31	31	46	46
120.35*	28°03.5'	114°56.4'	IV-10	1338	1348	293	48	48	164	164
120.45	27°43.3'	115°33.5'	IV-10	0601	0626	651	32	32	49	49
120.50	27°34'	115°53'	IV-10	0255	0321	727	54	54	74	74
120.60	27°14.5'	116°33.8'	IV-9	1856	1921	690	65	65	94	94
120.70	26°51.3'	117°13.8'	IV-9	1221	1246	764	92	92	120	120
120.80	26°33.7'	117°50.9'	IV-9	0620	0647	722	15	15	21	21
120.90	26°15'	118°29'	IV-9	0021	0046	723	21	21	29	29
120.100	25°53.2'	119°09'	IV-8	1721	1746	730	14	14	19	19
120.110	25°32.5'	119°51.9'	IV-8	0831	0856	793	19	19	24	24
123.40	27°17.7'	114°52.7'	IV-10	2011	2036	(747)	54	54	72	72
123.50	26°58.8'	115°31.3'	IV-11	0215	0241	721	63	63	87	87
123.60	26°39.2'	116°09.6'	IV-11	0806	0831	724	50	50	69	69
127.40	26°42.9'	114°28.2'	IV-12	0230	0256	706	54	54	76	76
127.50	26°23.3'	115°08'	IV-11	1946	2012	628	32	32	51	51
127.60	26°04'	115°46.7'	IV-11	1326	1351	773	18	18	23	23
130.35**	26°20.8'	113°44.1'	IV-12	0812	0826	443	72	72	162	162
130.40	26°09.2'	114°01'	IV-12	1220	1246	758	10	10	13	13
130.50	25°59'	114°43'	IV-12	1911	1936	705	26	26	37	37
130.60	25°29.2'	115°23.1'	IV-13	0135	0201	615	42	42	68	68
130.70	25°00.2'	116°05'	IV-13	0821	0846	775	40	40	52	52
130.80	24°39.2'	116°44.1'	IV-13	1306	1331	742	41	41	55	55
133.30	25°54.4'	113°08'	IV-14	1921	1946	821	64	64	78	78
133.40	25°39.8'	113°59'	IV-14	1306	1331	770	20	20	26	26
133.50	25°20'	114°33.9'	IV-14	0715	0742	712	24	24	34	34
133.60	24°56.9'	115°07'	IV-14	0015	0041	746	12	12	16	16
137.35	25°09.8'	113°11.7'	IV-16	1536	1601	783	37	37	47	47
137.40	25°03'	113°27.5'	IV-16	2036	2101	786	16	16	20	20
137.50(1	24°40.7'	114°01.7'	IV-17	0236	0301	772	22	22	28	28
137.60(1	24°22'	114°38'	IV-17	0816	0841	760	30	30	39	39

* - 70 meters of wire out
** - 100 meters of wire out
1) - May be non-quantitative due to tears in net

Plankton Volumes, Cruise XXV, May 1951
Lines 60 through 87
Data taken on U.S.F&WS vessel "Black Douglas"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 100 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.or cc.
60.60	37°37'	123°37'	V-2	2312	2336	739	336	336	455	455
60.70	37°17'	124°21'	V-3	0756	0821	754	63	63	84	84
60.80	36°57'	125°04'	V-3	1646	1711	768	53	53	69	69
60.90	36°37'	125°47'	V-4	0157	0221	726	294	294	405	405
60.100	36°17'	126°30'	V-4	1126	1151	769	107	107	139	139
60.110	35°57'	127°12'	V-4	1916	1941	752	243	243	323	323
61.55	37°37'	123°07.5'	V-1	1447	1511	822	16	16	19	19
63.57	37°09'	122°58'	V-1	1956	2021	881	392	392	445	445
63.67			Non-quantitative							
67.55	36°39'	122°26'	V-2	0216	0241	863	228	228	264	264
67.65	36°19'	123°09'	V-2	0847	0911	810	319	319	394	394
70.55	36°03'	122°02'	V-7	0404	0431	847	204	204	241	241
70.60	35°53'	122°23'	V-6	2142	2206	832	214	214	257	257
70.70	35°33'	123°06'	V-6	1517	1541	806	880	880	1092	1092
70.80	35°13'	123°48'	V-6	0822	0846	848	228	228	269	269
70.90	34°53'	124°30'	V-6	0052	0116	801	200	200	250	250
70.100	34°33'	125°12'	V-5	1837	1901	789	22	22	28	28
70.110	34°13'	125°54'	V-5	1217	1241	815	45	45	55	55
73.51	35°35.5'	121°20'	V-7	1111	1136	742	60	60	81	81
73.61	35°16'	122°02.5'	V-7	1906	1931	798	96	96	120	120
77.55	34°54.5'	121°13'	V-8	1036	1101	743	686	686	923	923
77.65	34°34'	121°55'	V-8	0242	0306	772	73	73	95	95
70.55	34°19'	120°48'	V-8	1857	1921	756	284	284	375	375
80.60			Not occupied							
80.70			Not occupied							
80.80			Not occupied							
80.90			Not occupied							
80.100			Not occupied							
80.110			Not occupied							
80.120			Not occupied							
80.130			Not occupied							
83.55	33°44'	120°24.5'	V-14	0802	0826	806	159	159	197	197
83.60	33°34'	120°45'	V-14	1341	1406	792	400	400	505	505
83.70	33°14.5'	121°26'	V-15	0406	0431	690	406	406	588	588
83.80			Not occupied							
83.90			Not occupied							
87.35	33°50'	118°37.5'	V-12	0627	0651	763	263	263	345	345
87.40	33°40'	118°58.5'	V-12	0156	0222	827	149	149	180	180
87.50*	33°20'	119°39.5'	V-11	1618	1628	359	72	72	201	201
87.60	33°00'	120°21.5'	V-11	0207	0231	850	4	4	5	5
87.70	32°39.5'	121°02'	V-10	1852	1916	787	33	33	42	42
87.80	32°19.5'	121°43'	V-10	0916	0941	754	56	56	74	74
87.90	31°59'	122°24'	V-10	0136	0201	752	59	59	78	78

* - 70 meters of wire out

Plankton Volumes, Cruise XXV (continued)
Lines 90 through 107. Data taken on Scripps' vessel "Crest"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol. per 1000 C.M. strained	
							Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
90.30	33°24.5'	117°55'	V-15	1004	1029	666	96	96	144	144
90.37	33°11'	118°23.5'	V-15	0657	0722	758	168	168	222	222
90.45	32°54.5'	118°56'	V-14	2320	2345	706	142	142	201	201
90.53	32°38.5'	119°29'	V-14	1703	1728	693	93	93	134	134
90.60	32°24.5'	119°57.5'	V-14	1202	1227	714	140	140	196	196
90.70	32°04.5'	120°39'	V-14	0702	0727	786	36	36	46	46
90.80	31°45'	121°19'	V-14	0042	0107	695	61	61	88	88
90.90	31°25.5'	121°59'	V-13	1846	1911	762	60	60	79	79
90.100	31°06'	122°40'	V-13	1315	1340	656	17	17	26	26
90.110	30°46'	123°20.5'	V-13	0608	0633	711	54	54	76	76
90.120	30°26.5'	124°01'	V-12	2149	2214	767	32	32	42	42
93.30	32°49'	117°31.5'	V-6	0843	0907	656	64	64	97	97
93.40	32°30'	118°12.5'	V-6	1441	1506	567	68	68	120	120
93.50	32°10'	118°53.5'	V-6	2112	2137	608	291	291	479	479
93.60	31°50'	119°34'	V-7	0348	0416	828	80	80	97	97
93.70	31°29'	120°14'	V-7	0829	0854	715	75	60	105	84
93.80	31°10'	120°54.5'	V-7	1649	1714	758	43	43	57	57
93.90	30°50'	121°35'	V-7	2149	2213	663	39	39	59	59
97.32	32°10.5'	117°16.5'	V-9	1459	1524	676	53	53	78	78
97.40	31°55'	117°49'	V-9	0943	1008	671	81	81	121	121
97.50	31°35'	118°29.5'	V-9	0350	0415	639	90	90	141	141
97.60	31°15.5'	119°10.5'	V-8	2151	2216	728	73	73	100	100
97.70	30°55'	119°50.5'	V-8	1609	1634	718	28	28	39	39
97.80	30°35'	120°30'	V-8	0958	1023	802	28	28	35	35
97.90	30°15'	121°11'	V-8	0326	0351	745	32	32	43	43
100.30	31°39.5'	116°46.5'	V-9	2009	2034	762	114	114	150	150
100.40	31°21'	117°27'	V-10	0251	0316	752	91	91	121	121
100.50	31°01'	118°07'	V-10	0942	1007	654	110	110	168	168
100.60	30°40.5'	118°47.5'	V-10	1530	1555	610	97	97	159	159
100.70	30°21'	119°28.5'	V-10	2206	2231	765	44	44	58	58
100.80	30°01'	120°09'	V-11	0507	0533	826	25	25	30	30
100.90	29°40.5'	120°49.5'	V-11	1025	1050	810	24	24	30	30
100.100	29°20.5'	121°27'	V-11	1558	1623	765	17	17	22	22
100.110	29°00.5'	122°07'	V-11	2150	2215	716	31	31	43	43
100.120	28°40.5'	122°46'	V-12	0454	0519	711	20	20	28	28
103.35	30°55.5'	116°45'	V-5	1727	1752	696	43	43	62	62
103.40	30°45.5'	117°05.5'	V-5	1339	1404	730	43	43	59	59
103.50	30°25.5'	117°45.5'	V-5	0711	0736	718	23	23	32	32
103.60	30°06'	118°25.5'	V-5	0101	0126	677	61	61	90	90
103.70	29°46'	119°05.5'	V-4	1924	1949	691	57	57	82	82
103.80	29°26.5'	119°45.5'	V-4	1351	1416	710	45	45	63	63
107.35	30°20'	116°23'	V-3	0221	0246	739	138	138	187	187
107.40	30°10.5'	116°43.5'	V-3	0719	0746	820	50	50	61	61
107.50	29°50.5'	117°23.5'	V-3	1316	1341	750	57	57	76	76
107.60	29°31'	118°03'	V-3	1920	1946	745	63	63	85	85
107.70	29°11'	118°43'	V-4	0126	0151	770	78	78	101	101
107.80	28°51.5'	119°22.5'	V-4	0905	0929	594	43	43	72	72

Plankton Volumes, Cruise XLV (continued)
Lines 110 through 137. Data taken on Scripps' Vessel "Horizon"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 100 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.or cc
110.35	29°37.5'	115°59.5'	V-3	1846	1911	(882)	62	62	70	70
110.40	29°35.1'	116°22.1'	V-5	1036	1101	(864)	69	69	80	80
110.50	29°16.5'	116°59.3'	V-5	1626	1651	716	75	75	105	105
110.60	28°56.5'	117°39'	V-5	2326	2351	728	66	66	91	91
110.70	28°30.5'	118°19.1'	V-6	0555	0621	779	65	65	83	83
110.80	28°17.2'	118°56.9'	V-6	1106	1131	708	44	44	62	62
110.90	27°56.7'	119°36'	V-6	1736	1802	919	30	30	33	33
110.100	27°34.6'	120°20'	V-6	2216	2241	736	20	20	27	27
110.110	27°13.2'	121°03.7'	V-7	0506	0531	756	14	14	19	19
113.35	29°11.5'	115°39.5'	V-3	1326	1351	629	132	132	210	210
113.40	28°57.3'	116°05.5'	V-3	0956	1021	735	32	32	44	44
113.50	28°35.2'	116°45'	V-3	0256	0321	772	80	80	104	104
113.60	28°19'	117°19.9'	V-2	2131	2156	728	34	34	47	47
113.70	28°01.2'	117°53.4'	V-2	1530	1556	814	64	64	79	79
117.35	28°37.6'	115°16'	V-1	1246	1311	829	25	25	30	30
117.40	28°28.7'	115°35'	V-1	1616	1642	762	40	40	53	53
117.50	28°03'	116°18'	V-1	2256	2321	1044	100	100	96	96
117.60	27°53.6'	116°58.3'	V-2	0441	0507	852	121	121	142	142
117.70	27°42'	117°35.7'	V-2	1116	1141	811	45	45	55	55
120.35*	28°03.7'	115°54.5'	V-9	2308	2321	278	107	107	385	385
120.45	27°42.7'	115°33'	V-9	1616	1642	756	66	66	87	87
120.50	27°33.1'	115°52'	V-9	1247	1311	735	80	80	109	109
120.60	27°11.5'	116°36.7'	V-9	0556	0621	746	63	63	84	84
120.70	26°51.6'	117°13.5'	V-8	2306	2331	749	50	50	67	67
120.80	26°30.9'	117°51.8'	V-8	1656	1721	692	22	22	32	32
120.90	26°05.5'	118°26.7'	V-8	1006	1031	734	9	9	12	12
120.100	25°48'	119°07.2'	V-8	0521	0546	804	5	5	6	6
120.110	25°31.7'	119°44.9'	V-7	2111	2136	728	22	22	30	30
123.40	27°18.5'	114°51.5'	V-11	1127	1151	654	116	116	177	177
123.50	26°58'	115°30.8'	V-11	1640	1708	1050	70	70	67	67
123.60	26°40.7'	116°10.7'	V-12	0026	0051	729	68	68	93	93
127.40	26°37.3'	114°27.1'	V-12	1736	1801	738	90	90	122	122
127.50	26°22'	115°08'	V-12	1211	1236	780	37	37	47	47
127.60	26°11'	115°51'	V-12	0515	0541	773	6	6	8	8
130.35	26°19.6'	113°50.3'	V-12	2306	2331	697	116	116	166	166
130.40	26°12'	114°11.8'	V-13	0241	0306	831	92	92	111	111
130.50	25°57.3'	114°51.7'	V-13	0836	0901	777	35	35	45	45
130.60	25°29'	115°22.3'	V-13	1426	1451	790	27	27	34	34
130.70	25°08.9'	116°02.2'	V-13	2011	2036	791	30	30	38	38
130.80	24°47.8'	116°41.7'	V-14	0325	0351	760	58	58	76	76
133.30	25°54.3'	113°09.8'	V-15	0711	0736	769	160	160	208	208
133.40	25°32.6'	113°47.5'	V-15	0046	0110	(732)	88	88	120	120
133.50	25°10.5'	114°21.4'	V-14	1856	1921	759	22	22	29	29
133.60	24°54.5'	115°00.8'	V-14	1316	1341	745	15	15	20	20
137.35**	25°10'	113°04.5'	V-15	1305	1313	248	48	48	193	193
137.35	25°10'	113°04.5'	V-15	1316	1341	764	130	130	170	170
137.40	25°00'	113°22.8'	V-15	1656	1721	(721)	126	126	175	175
137.50	24°39.8'	114°01.8'	V-15	2246	2311	(736)	43	43	58	58
137.60	24°20.8'	114°39.5'	V-16	0436	0501	749	28	28	37	37

* - 100 meters of wire out
** - 50 meters of wire out

Plankton Volumes, Cruise XXVI, June 1951
Lines 60 through 80. Data taken on U.S.F&WS Vessel "Black Douglas"
Lines 83 and 87. Data taken on Calif. F&G Vessel "Yellowfin"

Position			Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
		(1951)				Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start End	C.M.	cc.	cc.	cc.	cc.
60.60	37°37'	123°37	VI-8	1356 1421	772	223	223	290	290
60.70	37°17'	124°21'	VI-8	2140 2205	766	218	218	283	283
60.80	36°57'	125°04'	VI-9	0600 0626	644	728	728	1128	1128
60.90	36°37'	125°47'	VI-9	1506 1530	792	98	98	124	124
60.100	36°17'	126°30'	VI-9	2229 2256	798	369	369	461	461
60.110	35°57'	127°12'	VI-10	0506 0531	786	90	90	114	114
60.120	35°37'	127°54.5'	VI-10	1151 1216	794	93	93	117	117
60.130	35°17'	128°37'	VI-10	1921 1946	723	63	63	87	87
61.55	37°37'	123°07.5'	VI-6	2020 2046	841	288	288	343	343
63.57	37°09'	122°58'	VI-7	0214 0241	850	632	632	746	746
63.67	36°49'	123°41'	VI-8	0206 0231	797	218	218	273	273
67.55	36°39'	122°26'	VI-7	0840 0907	790	187	187	237	237
67.65	36°19'	123°09'	VI-7	1646 1711	748	576	576	772	772
70.55	36°03'	122°02'	VI-14	0230 0256	726	1584	1584	2186	2186
70.60	35°53'	122°23'	VI-13	2106 2131	847	302	302	356	356
70.70	35°33'	123°06'	VI-13	1331 1356	664	180	180	272	272
70.80	35°13'	123°48'	VI-13	0311 0336	776	422	422	544	544
70.90	34°53'	124°30'	VI-12	2014 2036	774	579	579	747	747
70.100	34°33'	125°12'	VI-12	1300 1326	735	335	335	456	456
70.110	34°13'	125°54'	VI-12	0524 0551	795	92	92	116	116
70.120	33°53'	126°35.5'	VI-11	2126 2151	809	42	42	52	52
70.130	33°33'	127°16.5'	VI-11	1421 1446	797	45	45	57	57
73.51	35°35.5'	121°20'	VI-14	0906 0931	917	300	300	327	327
73.61	35°16'	122°02.5'	VI-14	1456 1521	792	142	142	216	216
77.55	34°54.5'	121°13'	VI-15	0321 0346	748	200	200	268	268
77.65	34°34'	121°55'	VI-14	2101 2126	705	282	282	400	400
80.55	34°19'	120°48'	VI-15	1001 1026	842	107	107	127	127
80.60	34°09'	121°09'	VI-15	1341 1406	813	161	161	258	258
80.70	33°49'	121°51'	VI-15	2006 2031	837	282	282	336	336
80.80	33°29'	122°32'	VI-16	0211 0236	783	292	292	374	374
80.90	33°09'	123°13'	VI-16	0906 0931	809	48	48	60	60
80.100	32°49'	123°54'	VI-16	1520 1545	865	62	62	72	72
80.110	32°29'	124°34.5'	VI-16	2226 2251	838	51	51	61	61
80.120			Not occupied						
80.130			Not occupied						
83.55	33°44'	120°24.5'	V-31	1256 1321	556	99	99	178	178
83.60	33°34'	120°45'	Incomplete haul						
83.70	33°18.5'	121°28'	V-31	2240 2306	668	230	230	344	344
83.80	33°04'	122°12'	VI-1	0405 0431	681	161	161	236	236
83.90	32°34.5'	122°51'	VI-1	0916 0942	712	87	87	122	122
87.35	33°50'	118°37.5'	V-30	2352 0016	735	307	307	418	418
87.40	33°40'	118°58.5'	V-31	0345 0411	741	766	766	1033	1033
86.50	33°28'	119°46'	VI-2	1058 1111	392	722	722	1840	1840
87.60	33°01'	120°18'	VI-2	0627 0651	686	54	54	79	79
87.70	32°39'	121°01'	VI-2	0125 0151	(692)	51	51	74	74
87.80	32°16'	121°43'	VI-1	2116 2141	680	41	41	60	60
87.90	32°01'	122°32'	VI-1	1355 1421	628	54	54	86	86

Plankton Volumes, Cruise XXVI (continued)
Line 90. Data taken on U.S.F&WS Vessel "Black Douglas"
Lines 93 through 103. Data taken on Calif. F&G Vessel "Yellowfin"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol. per 100 C.M. strained	
Sta.	N.lat.	W.long.	(1951) Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.org. cc.
90.30	33°24.5'	117°55'	VI-20	0106	0131	734	102	102	139	139
90.37	33°11'	118°23.5'	VI-19	1844	1909	803	76	76	95	95
90.45	32°54.5'	118°56'	VI-19	1336	1401	805	185	185	229	229
90.53	32°38.5'	119°29'	VI-19	0850	0915	822	135	135	165	165
90.60	32°25'	119°57.5'	VI-19	0236	0301	846	315	315	372	372
90.70	32°04.5'	120°39'	VI-18	2021	2046	840	37	37	44	44
90.80	31°45'	121°19'	VI-18	1111	1139	777	68	68	88	88
90.90	31°25'	121°59'	VI-18	0505	0530	737	61	61	83	83
90.100	31°04.5'	122°40'	VI-17	2306	2331	800	89	89	111	111
90.110	30°44.5'	123°20'	VI-17	1650	1715	791	28	28	35	35
93.30	32°50'	117°31.5'	V-30	1446	1512	764	46	46	60	60
93.40	32°30'	118°12.5'	VI-3	2042	2106	(699)	487	487	696	696
93.50	32°09'	118°51'	VI-4	0036	0101	(760)	111	111	146	146
93.60	31°48.5'	119°31'	VI-4	0706	0731	(774)	95	95	123	123
93.70	31°29.5'	120°07.5'	VI-4	1306	1331	951	100	100	105	105
93.80	31°09'	120°53'	VI-4	1911	1936	704	110	110	156	156
93.90	30°50'	121°33.5'	VI-5	0155	0221	712	54	54	76	76
97.32	32°09'	117°16.5'	VI-6	1727	1751	805	75	75	93	93
97.40	31°58'	117°52.5'	VI-6	1216	1241	795	45	45	57	57
97.50	31°36.5'	118°32.5'	VI-6	0711	0736	709	83	83	117	117
97.60	31°16'	119°11'	VI-5	2355	0021	(905)	93	93	103	103
97.70	30°55'	119°50.5'	VI-5	1856	1922	(727)	25	25	34	34
97.80	30°38.5'	120°32.5'	VI-5	1206	1231	773	34	34	44	44
97.90	30°19.5'	121°07.5'	VI-5	0656	0721	766	51	51	67	67
100.30	31°40.5'	116°46.5'	VI-6	2242	2305	683	183	183	268	268
100.40	31°20'	117°30.5'	VI-7	0412	0436	717	74	74	103	103
100.50	31°02.3'	118°07.5'	VI-7	0957	1021	725	52	52	72	72
100.60	30°42'	118°51'	VI-7	1526	1551	800	48	48	60	60
100.70	30°22'	119°34'	VI-7	2206	2231	749	46	46	61	61
100.80	30°03'	120°16'	VI-8	0356	0421	732	43	43	59	59
100.90	29°42'	120°57'	VI-8	0957	1022	747	34	34	46	46
103.35	30°51'	116°57'	VI-10	0057	0121	698	86	86	123	123
103.40	30°42'	117°15'	VI-9	2106	2131	618	159	159	257	257
103.50	30°25'	117°46'	VI-9	1447	1511	758	152	152	200	200
103.60	30°04'	118°29'	VI-9	0726	0751	740	60	60	81	81
103.70	29°44'	119°07.5'	VI-9	0132	0157	737	68	68	92	92

Plankton Volumes, Cruise XXVI (continued)
Lines 107 through 130. Data taken on Scripps' vessel "Horizon"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol. per 1000 C.M. strained	
							Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
107.35	30°31.2'	116°25'	VI-13	0211	0236	740	66	66	89	89
107.40	30°22.9'	116°46.5'	VI-13	0606	0631	750	33	33	44	44
107.50	30°06.8'	117°23.9'	VI-13	1036	1102	789	51	51	65	65
107.60	29°35.6'	117°57.8'	VI-13	1654	1721	660	49	49	74	74
107.70	29°10.3'	118°34.2'	VI-13	2220	2246	640	52	52	81	81
107.80	28°54'	119°17.6'	VI-14	0329	0356	671	83	83	124	124
110.35	29°50.5'	116°03.4'	VI-12	2026	2051	764	73	73	96	96
110.40	29°31.9'	116°37.2'	VI-12	1556	1621	848	26	26	31	31
110.50	29°13.3'	117°12.3'	VI-12	1057	1121	895	36	36	40	40
110.60	28°54.2'	117°47.2'	VI-12	0551	0617	515	53	53	103	103
110.70	28°35'	118°22.2'	VI-12	0036	0100	647	154	123	238	190
110.80	28°15.9'	118°57'	VI-11	1926	1951	786	121	121	154	154
110.90	27°57.9'	119°33.9'	VI-11	1431	1456	664	69	69	105	105
110.100	27°41.2'	120°10.4'	VI-11	0911	0936	878	11	11	13	13
110.110	27°16.4'	120°54.3'	VI-11	0241	0305	785	22	22	28	28
113.35	29°12'	115°39'	VI-6	0800	0826	848	40	40	47	47
113.40	29°00'	115°57.7'	VI-6	1206	1231	743	31	31	42	42
113.50	28°41'	116°42'	VI-6	1757	1821	623	50	50	80	80
113.60	28°21.3'	117°27.5'	VI-6	2341	0006	744	152	152	204	204
113.70	28°02.5'	118°12.2'	VI-7	0625	0651	752	46	46	61	61
117.35	28°38'	115°16'	VI-8	1206	1231	734	81	81	110	110
117.40	28°27.9'	115°36'	VI-8	0816	0840	846	45	45	53	53
117.50	28°12.8'	116°17'	VI-8	0226	0251	702	83	83	118	118
117.60	27°47.5'	116°54'	VI-7	1951	2016	555	113	113	204	204
117.70	27°30.1'	117°50.5'	VI-7	1256	1321	702	51	51	73	73
120.35*	28°03'	114°54'	VI-8	2038	2049	315	403	333	1281	1058
120.45	27°43'	115°33'	VI-9	0111	0136	706	50	50	71	71
120.50	27°28.7'	115°55'	VI-9	0450	0516	840	32	32	38	38
120.60	27°14.3'	116°32.7'	VI-9	1127	1151	787	57	57	72	72
120.70	26°52.2'	117°10.9'	VI-9	1806	1831	475	43	43	91	91
120.80	26°34'	117°50.2'	VI-9	2321	2346	643	51	51	79	79
120.90	26°15.3'	118°30'	VI-10	0431	0456	584	40	40	69	69
120.100	25°59'	119°10'	VI-10	0826	0951	727	20	20	28	28
120.110	25°37.8'	119°43.8'	VI-10	1436	1501	797	14	14	18	18
123.40	27°18'	114°51.5'	V-30	2055	2121	840	145	145	173	173
123.50	26°54.7'	115°28.4'	V-31	0131	0156	834	50	50	60	60
123.60	26°38.2'	116°09'	V-31	0736	0802	728	71	71	98	98
127.40	26°39.7'	114°31'	VI-1	0236	0301	800	60	60	75	75
127.50	26°23.6'	115°07.3'	V-31	2011	2036	835	41	41	49	49
127.60	26°03.2'	115°47.5'	V-31	1356	1421	900	43	43	48	48
130.35	26°22.2'	113°54.3'	VI-1	0836	0901	857	116	116	135	135
130.40	26°08.8'	114°07.3'	VI-1	1216	1241	778	52	52	67	67
130.50	25°50.4'	114°50'	VI-1	1846	1911	874	82	82	94	94
130.60	25°26.5'	115°28.1'	VI-2	0246	0312	804	36	21	45	26
130.70	25°08.5'	116°02'	VI-2	0711	0737	809	12	12	15	15
130.80	24°51.4'	116°41.8'	VI-2	1131	1156	766	31	31	40	40
130.90	24°27.3'	117°18'	VI-2	2306	2331	770	52	52	67	67

* - 75 meters of wire out

Plankton Volumes, Cruise XXVI (continued)
Lines 133 through 157. Data taken on Scripps' vessel "Crest"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 100 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.or cc.
133.30	25°56.5'	113°12'	V-31	0719	0744	730	144	144	197	197
133.40	25°34'	113°46'	V-31	1316	1341	697	29	29	42	42
133.50	25°14.5'	114°24'	V-31	1844	1911	692	140	140	202	202
133.60	24°54.5'	115°01.5'	VI-1	0021	0046	728	25	25	34	34
137.35	25°08'	113°05'	VI-1	1926	1951	708	42	42	59	59
137.40	24°58.8'	113°23.5'	VI-1	1655	1721	707	13	13	18	18
137.50	24°39'	114°02.5'	VI-1	1112	1136	689	10	10	15	15
137.60	24°19'	114°40.5'	VI-1	0556	0621	795	56	56	70	70
140.35	24°35'	112°42.5'	VI-2	0241	0306	741	946	946	1276	1276
140.40	24°25'	113°01.5'	VI-2	0711	0736	737	156	156	212	212
140.50	24°06'	113°39.5'	VI-2	1245	1311	771	16	16	21	21
140.60	23°45.5'	114°17.5'	VI-2	1816	1841	754	21	21	28	28
140.70	23°25'	114°55'	VI-3	0226	0251	729	27	27	37	37
140.80	23°05'	115°32.5'	VI-3	0726	0752	764	36	36	47	47
140.90	22°45.5'	116°11'	VI-3	1241	1306	737	30	30	41	41
143.30	24°11'	112°03'	VI-6	2116	2139	671	197	197	294	294
143.35	24°01'	112°22'	VI-7	0041	0106	732	404	404	551	551
143.40	23°51'	112°41'	VI-7	0416	0441	696	210	210	302	302
143.50	23°30'	113°19.5'	VI-7	0911	0936	661	186	186	281	281
143.60	23°10'	113°57'	VI-7	1416	1441	698	17	17	24	24
147.25	23°46.5'	111°22.5'	VI-8	1501	1526	682	300	300	440	440
147.30	23°39'	111°36'	VI-8	1226	1251	706	127	127	180	180
147.40	23°16'	112°19'	VI-8	0631	0656	726	303	303	413	413
147.50	22°56'	112°56.5'	VI-8	0106	0131	754	281	281	373	373
147.60	22°36'	113°33.5'	VI-7	1926	1951	665	15	15	23	23
150.25	23°12'	111°01.5'	VI-5	1921	1946	583	142	142	244	244
150.30	23°02'	111°20'	VI-5	1636	1701	469	160	160	341	341
150.40	22°42'	111°57.5'	VI-5	1110	1136	746	264	264	354	354
150.50	22°21'	112°34'	VI-5	0546	0611	695	55	55	79	79
150.60	22°01'	113°11'	VI-4	2155	2221	757	113	113	149	149
150.70	21°40'	113°48'	VI-4	1626	1651	756	43	43	57	57
150.80	21°19.5'	114°25'	VI-4	1111	1136	698	18	18	26	26
150.90	20°59'	115°01.8'	VI-4	0327	0351	714	35	35	49	49
153.20	22°47.5'	110°22'	VI-8	2346	0011	637	185	185	290	290
153.30	22°28'	110°59.5'	VI-9	0506	0531	642	156	156	243	243
153.40	22°08.5'	111°38'	VI-9	1011	1036	683	303	303	444	444
153.50	21°47'	112°13.5'	VI-9	1536	1601	728	37	37	51	51
157.10	22°33'	109°23'	VI-10	2056	2121	652	202	202	310	310
157.20	22°13'	110°00'	VI-10	1556	1621	711	143	143	201	201
157.30	21°52.5'	110°37.5'	VI-10	1036	1101	682	101	101	148	148
157.40	21°32.5'	111°14.5'	VI-10	0356	0411	714	300	300	420	420
157.50	21°12.5'	111°52'	VI-9	2116	2141	666	44	44	66	66

Plankton Volumes, Cruise XXVII, July 1951
Lines 40 through 77
Data taken on U.S.F&WS Vessel "Black Douglas"

Position			Time (PST)			Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
			(1951)				Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
40.45	41°33'	125°00'	VII-18	1502	1526	852	118	118	139	139
40.50	41°23'	125°23'	VII-18	1126	1151	755	95	95	126	126
40.60	41°03'	126°09'	VII-18	0226	0251	608	769	769	1264	1264
40.70			Non quantitative							
40.80	40°23'	127°40'	VI-17	1328	1351	837	123	123	147	147
40.90	40°02'	128°25'	VII-17	0707	0732	897	66	66	74	74
40.100	39°42'	129°10'	VII-17	0137	0201	880	76	76	86	86
40.110	39°23'	129°55'	VII-16	1722	1747	946	26	26	27	27
43.50			Non quantitative							
43.60	40°28'	125°43'	VII-19	0505	0534	821	567	567	691	691
47.55	40°04'	124°55'	VII-19	1546	1611	861	426	426	495	495
47.60	39°54'	125°18'	VII-19	1113	1138	918	218	218	238	238
50.55	39°30'	124°30'	VII-14	1136	1201	900	32	32	36	36
50.60	39°20'	124°52'	VII-14	1516	1541	883	117	117	132	132
50.70	39°00'	125°36.5'	VII-14	2131	2156	941	304	304	323	323
50.80	38°40'	126°21'	VII-15	0347	0412	650	405	405	623	623
50.90	38°20'	127°05'	VII-15	1105	1131	576	708	708	1229	1229
50.100	38°00'	127°48'	VII-15	1723	1748	897	147	147	164	164
50.110	37°40'	128°33'	VII-15	2310	2336	942	29	29	31	31
53.54	38°58'	124°00'	VII-14	0450	0516	685	286	286	418	418
53.64	38°38'	124°44'	VII-13	2115	2141	(920)	182	182	198	198
57.54	38°24'	123°35'	VII-13	0805	0832	864	26	26	30	30
57.64	38°04'	124°19'	VII-13	1401	1426	723	325	325	450	450
60.60	37°37'	123°37'	VII-12	2255	2320	802	136	136	170	170
60.70	37°17'	124°21'	VII-11	2352	0017	840	203	203	242	242
60.80	36°57'	125°04'	VII-11	1646	1713	788	398	398	505	505
60.90	36°37'	125°47'	VII-11	0950	1016	805	144	144	179	179
60.100	36°17'	126°30'	VII-11	0035	0102	923	57	57	62	62
60.110	35°57'	127°12'	VII-10	1422	1448	894	30	30	34	34
60.120	35°37'	127°54.5'	VII-10	0455	0521	879	38	38	43	43
61.55	37°37'	123°07.5'	VII-12	1805	1831	828	65	65	79	79
63.57	37°09'	122°58'	VII-12	1320	1345	693	144	144	208	208
63.67	36°49'	123°41'	VII-12	0631	0656	758	444	444	586	586
67.55	36°39'	122°26'	VII-6	1246	1311	779	26	26	33	33
67.65	36°19'	123°09'	VII-6	2239	2305	786	97	67	123	85
70.55	36°03'	122°02'	VII-3	0643	0709	851	80	80	94	94
70.60	35°53'	122°23'	VII-4	1722	1746	824	158	158	192	192
70.70	35°33'	123°06'	VII-7	0620	0646	820	79	79	96	96
70.80	35°13'	123°48'	VII-7	1409	1435	814	242	242	297	297
70.90	34°53'	124°30'	VII-7	1959	2026	886	273	273	308	308
70.100	34°33'	125°12'	VII-8	0243	0310	858	108	108	126	126
70.110	34°13'	125°54'	VII-8	1116	1141	842	112	112	133	133
70.120	33°53'	126°35.5'	VII-8	1940	2006	851	19	19	22	22
73.51	35°35.5'	121°20'	VII-3	1325	1350	846	153	153	181	181
73.61	35°16'	122°02.5'	VII-4	1021	1047	(799)	127	127	159	159
77.55	34°54.5'	121°13'	VII-3	1905	1931	740	127	127	172	172
77.65	34°34'	121°55'	VII-4	0213	0238	659	108	108	164	164

Plankton Volumes, Cruise XXVII (continued)
Lines 80 through 100. Data taken on Scripps' vessel "Paolina T."

Position			(1951)	Time (PST)		C.M. water strained	Displacement volume		Vol.per 100 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.org. cc.
80.55	34°19'	120°48'	VI-29	Non quantitative			160	160	-	-
80.60	34°09'	121°09'	VII-1	Non quantitative			46	46	-	-
80.70	33°49'	121°54'	VII-1	1801	1826	787	63	63	80	80
80.80	33°30'	122°36'	VII-2	0125	0151	784	63	63	80	80
80.90	33°10'	123°21'	VII-2	0916	0941	790	52	52	66	66
80.100	32°49'	124°54'	VII-2	1541	1606	736	33	33	45	45
80.110	32°29'	124°34.5'	VII-2	2220	2246	758	36	36	47	47
80.120			Not occupied							
85.40	33°57'	119°11'	VII-7	1950	2016	875	92	92	105	105
85.50			Not occupied							
85.60			Not occupied							
85.70			Not occupied							
85.80			Not occupied							
85.90			Not occupied							
90.30	33°24'	117°56'	VII-6	0806	0831	728	77	77	106	106
90.37	33°10'	118°23'	VII-6	0246	0312	881	86	86	98	98
90.45	32°55'	118°57'	VII-5	2115	2141	75	75	Non quantitative		
90.53	32°36'	119°31'	VII-5	1506	1541	714	78	78	109	109
90.60	32°22'	119°55'	VII-5	0956	1021	752	87	87	116	116
90.70	32°04'	120°37'	VII-5	0130	0155	666	43	43	65	65
90.80	31°45'	121°19'	VII-4	1750	1815	700	27	27	39	39
90.90	31°27.5'	122°00'	VII-4	0840	0906	775	63	63	81	81
90.100	31°05'	122°40'	VII-4	0111	0136	791	31	31	39	39
90.110	30°45'	123°20'	VII-3	1530	1556	781	23	23	29	29
93.30	32°50'	117°31.5'	VII-10	2321	2346	762	54	54	71	71
93.40	32°24'	118°25'	VII-10	1226	1251	726	72	72	99	99
93.50	32°05'	119°03'	VII-10	0656	0721	686	59	59	86	86
93.60			Not occupied							
93.70			Not occupied							
93.80	31°11'	120°55'	VII-9	1336	1402	682	35	35	51	51
93.90	30°59'	121°33'	VII-9	0916	0941	726	18	18	25	25
97.32	32°11.5'	117°17'	VII-11	1619	1644	731	41	41	56	56
97.40	31°56'	117°49'	VII-11	2145	2211	684	63	63	92	92
97.50	31°39'	118°25'	VII-12	0446	0511	738	39	39	53	53
97.60	31°19'	119°05'	VII-12	1211	1240	703	84	84	107	107
97.70	30°57.5'	119°45.5'	VII-12	1936	2001	(732)	67	67	92	92
97.80	30°40.5'	120°23'	VII-13	0426	0451	750	67	67	89	89
97.90	30°15'	121°11'	VII-13	1416	1441	688	35	35	51	51
100.30			Not occupied							
100.40	31°21'	117°27'	VII-15	2116	2142	726	66	66	91	91
100.50	31°01'	118°06'	VII-15	1307	1331	759	46	46	61	61
100.60	30°43'	118°49'	VII-15	0556	0621	575	42	42	73	73
100.70	30°21'	119°27'	VII-14	2231	2256	567	48	48	85	85
100.80	30°03'	120°03'	VII-14	1556	1621	725	37	37	51	51
100.90	29°38'	120°51'	VII-14	0826	0851	608	34	34	56	56
100.100	29°21'	121°27'	VII-13	0001	0026	629	22	22	35	35

Plankton Volumes, Cruise XXVII (Cont'd)
Lines 103 through 137. Data taken on Scripps' Vessel "Crest"

Stn.	Position N.lat.	Position W.long.	(1951) Date	Time (PST) Start	Time (PST) End	Vol. water strained C.M.	Displacement volume Total cc.	Displacement volume Sm.org. cc.	Vol. per 1000 C.M. strained Total cc.	Vol. per 1000 C.M. strained Sm.org. cc.
103.35			Not occupied							
103.40			Not occupied							
103.50			Not occupied							
103.60			Not occupied							
103.70			Not occupied							
107.35			Not occupied							
107.40			Not occupied							
107.50			Not occupied							
107.60			Not occupied							
107.70			Not occupied							
110.35			Not occupied							
110.40			Not occupied							
110.50			Not occupied							
110.60			Not occupied							
110.70			Not occupied							
110.80	28°16.5'	118°57.5'	VII-5	2004	2030	774	59	59	76	76
110.90	27°58'	119°35'	VII-5	1303	1330	783	91	91	116	116
113.35			Not occupied							
113.40			Not occupied							
113.50			Not occupied							
113.60			Not occupied							
117.35			Not occupied							
117.40			Not occupied							
117.50			Not occupied							
117.60			Not occupied							
120.35*	28°03'	114°54'	VII-3	0711	0734	(700)	24	24	34	34
120.45	27°43'	115°33'	VII-3	1209	1236	717	60	36	84	50
120.50	27°33'	115°52.5'	VII-3	1602	1628	779	119	119	153	153
120.60	27°13'	116°31.5'	VII-3	2125	2151	683	148	148	217	217
120.70	26°52.5'	117°10'	VII-4	0456	0521	721	45	45	62	62
120.80	26°32.5'	117°48.5'	VII-4	1023	1049	(799)	38	38	48	48
120.90	26°13'	118°27.5'	VII-4	1541	1608	(787)	27	27	34	34
123.40	27°18'	114°51.5'	VII-3	0124	0150	750	92	84	123	112
123.50	26°58'	115°30.5'	VII-2	2015	2041	(768)	83	83	108	108
123.60	26°38.5'	116°09'	VII-2	1450	1516	(815)	12	12	15	15
127.40	26°42.5'	114°30.5'	VII-1	2155	2221	745	23	23	31	31
127.50	26°22'	115°08.5'	VII-1	0335	0401	(785)	132	113	168	144
127.60	26°02'	115°47'	VII-2	0854	0920	(807)	55	55	68	68
130.35	26°19'	113°48.5'	VI-29	2257	2323	862	87	74	101	86
130.40	26°09'	114°07.5'	VI-29	1926	1951	769	18	18	23	23
130.50	25°48.5'	114°46'	VI-29	1411	1436	775	27	27	35	35
130.60	25°28'	115°23.5'	VI-29	0453	0523	907	23	23	25	25
133.30	25°54.5'	113°07.5'	VI-30	0425	0451	679	68	68	100	100
133.40	25°34.5'	113°45.5'	VI-30	0914	0940	754	99	99	131	131
133.50	25°14.5'	114°24'	VI-30	1458	1524	747	23	23	31	31
137.35	25°10'	113°04.5'	VII-1	0735	0801	(920)	145	145	161	161
137.40	25°00'	113°23.5'	VII-1	0326	0351	(790)	76	76	96	96
137.50	24°40'	114°01.5'	VI-30	2025	2051	816	49	49	60	60

* - 100 meters of wire out

Plankton Volumes, Cruise XXVIII, August 1951
Lines 40 through 77
Data taken on U.S.F&WS Vessel "Black Douglas"

Sta.	N.lat.	W.long.	(1951) Date	Time (PST) Start	End	Vol. water strained C.M.	Displacement volume Total cc.	Sm.org. cc.	Vol.per 100 C.M.strained Total cc.	Sm.or cc.
40.38*	41°47.2'	124°27.8'	VIII-14	1643	1656	480	13	13	27	27
40.40	41°43.2'	124°37.8'	VIII-14	1422	1436	532	153	137	287	257
40.50	41°23'	125°23'	VIII-14	0456	0511	571	159	159	279	279
40.60	41°03'	126°09'	VIII-13	2130	2146	546	435	435	796	796
40.70	40°42'	126°55'	VIII-13	1432	1446	474	390	390	822	822
40.80	40°23'	127°40'	VIII-13	0656	0711	569	190	190	334	334
43.42*	41°04.2'	124°20.5'	VIII-14	2348	2401	484	540	540	1116	1116
43.50	40°48'	124°57'	VIII-15	0606	0621	558	473	473	847	847
43.60	40°28'	125°43'	VIII-15	1202	1216	545	167	167	306	306
47.50	40°14'	124°32.2'	VIII-16	0404	0421	593	57	57	96	96
47.60	39°54'	125°18'	VIII-15	1836	1851	566	243	243	429	429
50.47*	39°46'	123°54.2'	VIII-11	0202	0216	507	63	52	124	107
50.50	39°40'	124°07.8'	VIII-11	0416	0431	554	70	70	126	126
50.60	39°20'	124°52'	VIII-11	1519	1534	510	122	122	239	239
50.70	39°00'	125°36.5'	VIII-12	0206	0221	449	143	143	319	319
50.80	38°40'	126°21'	VIII-12	1042	1056	590	226	226	383	383
53.52*	39°02'	123°51.2'	VIII-10	1823	1836	459	38	38	83	83
53.55	38°56'	124°04.5'	VIII-10	1517	1531	493	54	54	109	109
53.65	38°36'	124°48.5'	VIII-10	0555	0611	628	222	222	353	353
57.51*	38°30'	123°22'	VIII-9	0248	0301	460	267	267	580	580
57.55	38°22'	123°39.5'	VIII-9	0511	0526	573	75	75	131	131
57.65	38°02'	124°23.5'	VIII-9	1336	1351	530	75	75	142	142
60.55*	37°47.5'	123°15'	VIII-7	1018	1031	465	70	70	150	150
60.60	37°37'	123°37'	VIII-7	0420	0436	585	164	164	280	280
60.70	37°17'	124°21'	VIII-6	2059	2117	691	82	82	119	119
60.80	36°57'	125°04'	VIII-6	1311	1326	531	81	81	152	152
60.90	36°37'	125°47'	VIII-6	0601	0616	482	60	60	124	124
63.52*	37°19'	122°36.2'	VIII-1	2053	2106	385	75	75	195	195
63.55	37°13'	122°49.5'	VIII-1	2326	2341	455	125	125	275	275
63.65	36°53'	123°32'	VIII-2	0551	0607	518	55	55	106	106
67.50*	36°49'	122°04.6'	VIII-3	0018	0031	457	85	85	186	186
67.55**	36°39'	122°26'	VIII-2	1927	1940	468	82	82	175	175
67.65	36°19'	123°09'	VIII-2	1242	1256	520	84	84	162	162
70.51	36°10.4'	121°45.7'	VIII-3	0611	0626	550	69	57	126	104
70.60	35°53'	122°23'	VIII-4	1756	1811	559	192	192	344	344
70.70	35°33'	123°06'	VIII-5	0036	0051	547	52	52	95	95
70.80	35°13'	123°48'	VIII-5	0711	0726	545	46	46	84	84
73.50*	35°37'	121°16.6'	VIII-3	1218	1231	433	26	26	60	60
73.60	35°18'	121°58.4'	VIII-4	1046	1101	538	56	56	104	104
77.50*	35°04.4'	120°52'	VIII-3	1723	1736	480	87	87	181	181
77.55	34°54.5'	121°13'	VIII-3	2051	2106	555	124	124	224	224
77.65	34°34'	121°55'	VIII-4	0306	0321	499	93	93	186	186

* - 100 meters of wire out
** - 170 meters of wire out

Plankton Volumes, Cruise XXVIII (continued)
Lines 80 through 105. Data taken on Scripps' Vessel "Crest

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.org. cc.
80.51*	34°27'	120°34'	VII-31	1542	1556	397	22	22	55	55
80.55	34°19.5'	120°48'	VII-31	2120	2136	476	81	81	170	170
80.60	34°09'	121°08.5'	VIII-1	0126	0141	470	120	120	255	255
80.70	33°48'	121°50'	VIII-1	0706	0716	499	31	31	62	62
80.80	33°28'	122°30.5'	VIII-1	1304	1319	478	38	20	80	42
85.38	34°01.5'	119°02.5'	VIII-2	2058	2114	514	87	87	169	169
85.40	33°56.5'	119°09.5'	VIII-2	1911	1926	438	45	45	103	103
85.50	33°36.8'	119°51.5'	VIII-2	1406	1421	476	40	40	84	84
85.60	33°12.5'	120°38.5'	VIII-2	0750	0806	536	63	63	118	118
85.70	32°54.5'	121°17'	VIII-2	0216	0231	524	78	78	149	149
85.80	32°36'	121°56'	VIII-1	1958	2014	565	60	60	106	106
87.35	33°50'	118°37'	VIII-3	0011	0026	503	71	71	141	141
90.28	33°28'	117°46.5'	VIII-3	0646	0701	500	21	16	42	32
90.30	33°19.5'	117°55'	VIII-3	0840	0857	563	29	19	52	34
90.37	33°11'	118°25.5'	VIII-4	1125	1141	618	25	25	40	40
90.45	32°54'	118°55.8'	VIII-4	1624	1639	520	48	48	92	92
90.53	32°38'	119°28'	VIII-4	2044	2102	636	68	68	107	107
90.60	32°25.5'	119°55'	VIII-5	0057	0112	518	82	82	158	158
90.70	32°04.7'	120°39'	VIII-5	0642	0656	521	60	60	115	115
90.80	31°45'	121°18.5'	VIII-5	1241	1256	490	24	24	49	49
90.90	31°25'	121°59'	VIII-5	1846	1901	513	12	12	23	23
90.100	31°04.5'	122°40'	VIII-6	0036	0051	515	25	25	48	48
93.27*	32°56'	117°17'	VIII-7	1813	1826	459	19	19	41	41
93.30	32°49.5'	117°30.5'	VIII-7	1516	1531	533	34	34	64	64
93.40	32°31.5'	118°09'	VIII-7	1050	1106	528	40	40	76	76
93.50	32°03'	118°50'	VIII-7	0411	0426	527	41	41	78	78
93.60	31°45.5'	119°31.5'	VIII-6	2257	2314	564	34	34	60	60
93.70	31°27.5'	120°13'	VIII-6	1721	1736	621	13	13	21	21
93.80	31°10'	120°54.5'	VIII-6	1045	1101	558	13	13	23	23
97.30**	32°15.2'	117°09'	VIII-7	2238	2247	343	21	21	61	61
97.32	32°11.5'	117°17'	VIII-8	0056	0111	573	28	28	49	49
97.40	32°55.5'	117°50'	VIII-8	0526	0541	462	30	30	65	65
97.50	31°35.5'	118°30.5'	VIII-8	1140	1156	539	28	28	52	52
97.60	31°15.5'	119°10.5'	VIII-8	1941	1957	538	93	93	173	173
97.70	30°55'	119°50.5'	VIII-9	0106	0121	506	47	41	93	81
97.80	30°35.5'	120°31'	VIII-9	0627	0641	490	30	30	61	61
100.29*	31°41.2'	116°43'	VIII-10	1310	1321	411	29	29	70	70
100.30	31°40.5'	116°47.2'	VIII-10	1204	1221	656	19	19	29	29
100.40	31°21'	117°27'	VIII-10	0532	0546	523	88	88	168	168
100.50	31°01'	118°07'	VIII-10	0036	0051	576	33	33	57	57
100.60	30°41'	118°47.5'	VIII-9	1922	1936	503	50	50	99	99
100.70	30°20.5'	119°27'	VIII-9	1436	1451	588	97	97	165	165
105.32**	30°45'	116°21'	VIII-10	1854	1904	320	36	36	112	112
105.35	30°39'	116°33'	VIII-10	2015	2031	524	34	34	65	65
105.40	30°28.5'	116°54'	VIII-11	0041	0056	504	60	50	119	99
105.50	30°08.5'	117°34.5'	VIII-11	0701	0716	472	40	40	85	85
105.60	29°48.5'	118°14.5'	VIII-11	1221	1236	560	29	29	52	52

* - 100 meters of wire out
** - Less than 100 meters of wire out

Plankton Volumes, Cruise XXVIII (continued)
Lines 110 through 137. Data taken on Scripps' Vessel "Paolina T"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
			(1951)				Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
110.33**	29°50.5'	115°52'	VIII-14	0438	0449	375	Sample missing			
110.35	29°45'	116°02.5'	VIII-14	0126	0141	483	33	33	68	68
110.40	29°36'	116°21'	VIII-13	2116	2131	510	74	74	145	145
110.50	29°16'	116°59'	VIII-13	1446	1501	535	20	20	37	37
110.60	28°56.5'	117°39'	VIII-13	0916	0931	527	30	30	57	57
115.27**	29°11'	114°56'	VIII-12	0028	0039	390	35	35	90	90
115.30*	29°05'	115°08'	VIII-12	0252	0306	367	70	70	191	191
115.35	28°56.5'	115°27.5'	VIII-12	0631	0646	461	31	31	67	67
115.40	28°47'	115°48'	VIII-12	1026	1041	469	27	27	58	58
115.50	28°26'	116°24.5'	VIII-12	1736	1751	538	15	15	28	28
115.60	28°05'	117°05'	VIII-13	0010	0026	470	34	34	72	72
120.25**	28°21'	114°16.5'	VIII-11	0524	0529	198	4	4	20	20
120.30**	28°12'	114°36'	VIII-11	0143	0150	210	128	128	609	609
120.35**	28°03'	114°54'	VIII-10	2143	2155	270	25	25	93	93
120.45	27°44'	115°33'	VIII-10	1511	1526	550	54	46	98	84
120.50	27°27'	115°52'	VIII-10	1041	1056	508	40	40	79	79
120.60	27°10'	116°30'	VIII-10	0446	0501	504	81	81	160	160
120.70	26°52'	117°10'	VIII-9	2221	2236	495	130	122	263	246
120.80	26°34'	117°49'	VIII-9	1601	1616	522	47	47	90	90
120.90	26°14'	118°32.5'	VIII-9	1001	1016	515	35	35	68	68
123.37**	27°23'	114°42.5'	VIII-2	0335	0348	640	267	267	417	417
123.40	27°16'	114°55.5'	VIII-2	0621	0638	515	446	446	866	866
123.50	27°04'	115°30'	VIII-2	1156	1211	459	22	22	48	48
123.60	26°39'	116°09'	VIII-2	1836	1851	560	12	12	21	21
127.34**	26°55.5'	114°06.3'	VIII-3	1828	1839	338	17	17	50	50
127.40	26°44'	114°29.5'	VIII-3	1355	1411	481	58	58	121	121
127.50	26°23.5'	115°08'	VIII-3	0715	0731	573	50	50	87	87
127.60	26°04'	115°47'	VIII-3	0101	0116	571	22	22	38	38
130.30**	26°29.5'	113°29.2'	VIII-4	1224	1232	300	27	27	90	90
130.35	26°22'	113°50'	VIII-4	1601	1616	508	46	38	91	75
130.40	26°16.5'	114°09'	VIII-4	1954	2016	515	Sample missing			
130.50	25°40'	114°45.5'	VIII-5	0320	0337	569	123	123	216	216
130.60	25°28'	115°26'	VIII-5	0926	0941	548	83	78	152	142
133.25**	26°04.5'	112°48'	VIII-6	1138	1145	238	30	30	126	126
133.30	25°53'	113°28'	VIII-6	0536	0551	423	30	30	71	71
133.40	25°35'	113°56'	VIII-5	2341	2357	284	85	85	300	300
133.50	25°14.5'	114°24'	VIII-5	1716	1731	548	51	51	93	93
137.23**	25°35'	112°18.5'	VIII-7	0628	0635	270	58	58	215	215
137.30	25°21'	112°46'	VIII-7	1046	1101	589	69	69	117	117
137.40	25°03'	113°23'	VIII-7	1701	1716	544	30	30	55	55
137.50	24°40'	114°02'	VIII-7	2311	2316	564	26	26	46	46

* - 100 meters of wire out
** - Less than 100 meters of wire out

Plankton Volumes, Cruise XXIX, September 1951
Lines 60 through 85 except Line 80
and a Special Grid of Stations off Central Calif.
(Having Fish & Game Block Numbers)
Data taken on Scripps' Vessel "Paolina T"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
			(1951)				Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
60.60	37°33.2'	124°35.5'	IX-2	0456	0511	403	131	131	325	325
60.70	37°13.5'	124°13'	IX-1	1916	1931	375	99	99	264	264
60.80	36°55'	125°00'	IX-1	1251	1306	450	390	390	867	867
60.90	36°39'	125°43.5'	IX-1	0736	0751	424	139	139	328	328
70.60	35°53'	122°23'	VIII-30	2005	2021	470	55	55	117	117
70.70	35°28.6'	123°10'	VIII-31	0310	0326	416	33	33	79	79
70.80	35°07'	123°52.8'	VIII-31	0906	0921	504	16	16	32	32
70.90	34°53'	124°30'	VIII-31	1421	1436	412	206	206	500	500
73.60	35°13'	121°58.4'	VIII-30	1356	1411	463	43	43	93	93
77.50	35°04.4'	120°52'	VIII-29	2122	2136	410	49	49	119	119
77.55	34°54'	121°18.7'	VIII-30	0120	0136	453	94	94	207	207
77.65	34°38.5'	121°00.8'	VIII-30	0712	0726	454	24	24	53	53
83.55	33°44'	120°25'	IX-8	0726	0740	372	22	22	59	59
85.38	34°00.4'	119°03'	IX-8	1942	1954	293	15	15	51	51
85.40	33°57.4'	119°10.8'	IX-8	1751	1806	421	23	23	55	55
85.50	33°37.4'	119°50.1'	IX-8	1136	1150	357	50	50	140	140
440	38°05'	123°13.7'	IX-2	1328	1341	313	58	58	185	185
449	37°56.8'	123°04.7'	IX-2	1948	1959	269	89	89	331	331
451	37°56'	123°25.1'	IX-2	1646	1651	372	62	62	167	167
457	37°45'	122°53.8'	IX-3	0043	0051	185	32	32	173	173
459	37°45'	123°15'	IX-3	0408	0421	303	178	167	588	551
465	37°32.6'	122°52'	IX-3	1313	1326	355	19	19	53	53
467	37°35'	123°05.2'	IX-3	1016	1031	382	20	20	52	52
475	37°23.5'	122°56'	IX-4	1501	1516	378	48	48	127	127
477	37°25'	123°15'	IX-4	1821	1836	399	62	62	156	156
480	37°15'	122°46.2'	IX-5	0053	0106	336	66	60	196	179
482	37°15'	123°05'	IX-4	2136	2150	437	136	136	311	311
503	37°05'	122°35.2'	IX-5	0503	0516	350	51	51	146	146
505	37°06.1'	123°00'	IX-5	0741	0756	Non-quantitative				
509	36°55'	122°05'	IX-5	1804	1811	207	81	81	392	392
511	36°57'	122°24'	IX-5	1516	1530	410	38	38	93	93
513	36°55'	122°48.8'	IX-5	1026	1041	404	37	37	91	91
517	36°44.3'	121°56.5'	IX-5	2128	2141	Non-quantitative				
519	36°44.2'	122°15.2'	IX-6	0021	0036	367	59	59	161	161
521	36°45'	122°35'	IX-6	0346	0401	346	38	38	110	110
527	36°35'	122°05'	IX-6	1026	1041	393	55	55	140	140
529	36°35'	122°26.2'	IX-6	0701	0716	317	20	20	63	63
534	36°25'	122°15'	IX-6	1416	1431	463	22	22	47	47
540	36°14.3'	122°05.6'	IX-6	1941	1956	429	41	41	96	96
549	36°04.4'	121°55'	IX-7	0030	0046	375	46	46	123	123
555	36°54.2'	121°46.7'	IX-7	0426	0441	349	54	54	155	155
562	35°44.9'	121°35'	IX-7	0851	0906	396	12	12	35	35
603	35°35'	121°35'	IX-7	1246	1301	434	42	42	97	97
609	35°25'	121°14.9'	IX-7	1611	1626	371	33	33	89	89
616	35°14.8'	121°05'	IX-7	1916	1931	339	56	56	165	165

Plankton Volumes, Cruise XXIX (continued)

Lines 80, 90 through 115

Data taken on U.S.F&WS Vessel "Black Douglas"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
			(1951)				Total	Sm.org.	Total	Sm.org
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
80.51*	34°26.5'	120°32.5'	IX-12	2058	2111	436	16	16	37	37
80.55	34°19'	120°48'	IX-12	1806	1821	539	223	214	414	397
80.60	34°09'	121°09'	IX-12	1451	1506	522	27	27	52	52
80.70	33°49'	121°51'	IX-12	0846	0901	528	73	73	138	138
80.80	33°29'	122°32'	IX-12	0221	0236	511	28	28	55	55
80.90	33°09'	123°13'	IX-11	1931	1946	462	16	16	35	35
80.100	32°49'	123°54'	IX-11	1232	1246	507	16	16	32	32
90.28	33°28.5'	117°46.7'	IX-9	0611	0626	499	16	16	32	32
90.30	33°24.5'	117°55'	IX-9	0802	0816	519	17	17	33	33
90.37	33°11'	118°23.5'	IX-9	1212	1226	496	58	32	117	65
90.45	32°54.5'	118°56'	IX-9	1721	1736	528	130	130	246	246
90.53	32°38.5'	119°29'	IX-9	2336	2351	535	32	32	60	60
90.60	32°25'	119°57.5'	IX-10	0436	0451	506	19	19	38	38
90.70	32°04.5'	120°39'	IX-10	1121	1136	528	33	33	63	63
93.27*	32°56'	117°19.2'	IX-9	0058	0111	475	18	18	38	38
93.30	32°50'	117°31.5'	IX-8	2116	2131	563	74	74	131	131
93.40	32°30'	118°12.5'	IX-8	1528	1541	471	7	7	15	15
93.50	32°10'	118°53.5'	IX-8	0841	0856	534	15	15	28	28
97.30**	32°15.4'	117°08.8'	IX-7	1343	1353	354	8	8	23	23
97.32	32°11.5'	117°17'	IX-7	1502	1516	503	12	12	24	24
97.40	31°55.5'	117°50'	IX-7	2011	2026	571	26	26	46	46
97.50	31°35.5'	118°30.5'	IX-8	0208	0223	515	39	39	76	76
100.29**	31°42.2'	116°43.4'	IX-7	0621	0633	379	23	23	61	61
100.30	31°40.5'	116°46.5'	IX-7	0426	0441	536	28	28	52	52
100.40	31°21'	117°27'	IX-6	1957	2011	558	24	24	43	43
100.50	31°01'	118°07'	IX-6	1201	1216	544	46	46	85	85
100.60	30°41'	118°47.5'	IX-6	0346	0401	533	34	34	64	64
100.70	30°20.5'	119°27'	IX-5	2020	2036	537	33	33	62	62
100.80	30°01'	120°07'	IX-5	1241	1256	525	72	72	137	137
100.90	29°40.5'	120°47'	IX-5	0401	0416	521	26	26	50	50
103.30**	31°05.2'	116°25'	VIII-31	2331	2343	445	37	37	83	83
103.35	30°55.5'	116°45'	IX-1	0306	0321	577	76	70	132	121
103.40	30°45.5'	117°05.5'	IX-1	0737	0751	530	32	32	60	60
107.32	30°25.8'	116°11'	IX-1	2137	2151	497	48	48	97	97
107.35	30°20'	116°23'	IX-1	1732	1746	518	25	25	48	48
107.40	30°10.5'	116°43.5'	IX-1	1332	1346	516	30	30	58	58
110.33**	29°50.5'	115°52.2'	IX-2	0338	0349	337	42	42	125	125
110.35	29°46.5'	116°00'	IX-2	0526	0541	507	24	24	47	47
110.40	29°36.5'	116°19.5'	IX-3	1327	1341	510	10	10	20	20
110.50	29°16.5'	116°59'	IX-3	2006	2021	524	62	62	118	118
110.60	28°56.5'	117°39'	IX-4	0256	0311	525	50	50	95	95
115.27**	29°11'	114°55'	IX-2	1423	1435	412	10	10	24	24
115.30*	29°05'	115°08'	IX-2	1658	1711	446	29	29	65	65
115.35	28°55'	115°27.5'	IX-2	2026	2041	485	62	62	128	128
115.40	28°45'	115°47'	IX-3	0131	0146	535	46	46	86	86

* - 100 meters of wire out

** - Less than 100 meters of wire out

Plankton Volumes, Cruise XXIX (continued)
Lines 120 through 157. Data taken on Scripps' Vessel "Crest"

Position			Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
		(1951)				Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start End	C.M.	cc.	cc.	cc.	cc.
120.25	28°03'	114°15'	VIII-30	1908 1917	238	21	21	88	88
120.30	28°13'	114°34.2'	VIII-30	2130 2141	366	46	46	126	126
120.35	28°02'	114°54'	VIII-31	0027 0040	384	86	86	224	224
120.45	27°42.5'	115°33'	VIII-31	0505 0521	461	85	85	185	185
120.50	27°33'	115°52'	VIII-31	0856 0911	Sample lost				
120.60	27°13.5'	116°31.5'	VIII-31	1514 1529	478	52	52	109	109
120.70	26°52.5'	117°14'	VIII-31	1955 2011	492	83	83	169	169
120.80	26°32'	117°56'	IX-1	0221 0236	431	142	142	329	329
120.90	26°11'	118°38'	IX-1	0645 0701	494	38	38	77	77
123.37	27°24'	114°40'	IX-11	2324 2333	220	33	33	150	150
123.40	27°19.3'	114°49'	IX-11	2138 2147	271	11	11	40	40
127.34	26°55.5'	114°06'	IX-11	1247 1300	393	23	23	58	58
127.40	26°44'	114°29'	IX-11	1636 1651	429	73	73	170	170
130.30	26°29'	113°29'	IX-3	0003 0016	418	45	45	108	108
130.35	26°20.5'	113°46'	IX-2	2201 2216	Non quantitative				
130.40	26°09'	114°07.5'	IX-3	1731 1746	431	100	100	232	232
130.50	25°51'	114°45.5'	IX-3	1317 1332	448	50	50	112	112
130.60	25°23'	115°25'	IX-3	0440 0456	446	10	10	22	22
130.70	25°03'	115°13'	IX-3	0028 0044	464	58	58	117	117
133.25	26°04.5'	112°48'	IX-3	2018 2031	411	70	70	170	170
133.30	25°54.5'	113°07.5'	IX-3	2231 2245	463	90	90	194	194
137.23	25°34'	112°18.6'	IX-4	0618 0628	346	64	64	185	185
137.30	25°21'	112°43.5'	IX-4	0332 0346	486	78	78	160	160
140.30	24°45.5'	112°24'	IX-4	1137 1148	454	39	39	86	86
140.35	24°36'	112°43'	IX-4	1351 1406	501	63	63	126	126
140.40	24°27'	113°00'	IX-4	1716 1741	546	340	25	623	46
140.50	24°05'	113°40'	IX-4	2316 2331	473	27	27	57	57
140.60	23°45'	114°17'	IX-5	0630 0646	514	11	11	21	21
140.70	23°27'	114°58'	IX-5	1036 1051	520	18	18	35	35
143.30	24°11.5'	112°03'	IX-9	2107 2119	303	50	50	165	165
143.35	24°01.5'	112°22.5'	IX-9	1711 1726	494	43	43	87	87
147.20	23°56'	111°04'	IX-9	0657 0709	410	56	56	137	137
147.25	23°47'	111°23'	IX-9	0911 0926	471	50	50	106	106
147.30	23°36'	111°41.5'	IX-9	1206 1221	504	59	59	117	117
150.19	23°24'	110°39'	IX-7	2256 2311	506	99	53	196	105
150.25	23°12'	111°02'	IX-7	2031 2046	527	33	33	63	63
150.30	23°01'	111°19'	IX-7	1616 1631	546	35	35	64	64
150.40	22°35'	111°58.5'	IX-7	1136 1151	496	32	32	64	64
150.50	22°17'	112°33'	IX-7	0620 0636	537	61	61	114	114
150.60	21°59'	113°09'	IX-7	0211 0225	484	93	48	192	99
150.70	21°40'	113°48'	IX-6	1845 1901	543	16	16	30	30
150.80	21°20'	114°28'	IX-6	1426 1436	483	10	10	21	21
150.90	21°00'	115°05'	IX-6	0816 0831	509	10	10	20	20
150.100	20°39'	115°43'	IX-6	0405 0421	549	16	16	29	29
153.16	22°55'	110°07.5'	IX-8	0406 0421	532	124	124	233	233
153.20	22°48'	110°22'	IX-8	0716 0731	489	70	70	143	143
157.10	22°33'	110°00'	IX-8	1716 1731	543	134	134	247	247
157.20	22°13'	109°23'	IX-8	1312 1326	494	49	49	99	99

Plankton Volumes, Cruise XXX, October 1951
Lines 60 through 77
and a Special Grid of Stations off Central Calif.
(Having Fish & Game Block Numbers)
Data taken on U.S.F&WS Vessel "Black Douglas"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 c.m.strained	
			(1951)				Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
60.60	37°37'	123°37'	X-6	0524	0541	577	49	49	85	85
60.70	37°17'	124°21'	X-5	2116	2131	568	255	255	449	449
60.80	36°57'	125°04'	X-5	1326	1341	506	40	29	79	57
60.90			Not occupied							
60.100			Not occupied							
60.110			Not occupied							
70.60	35°53'	122°23'	X-2	1956	2012	550	64	64	116	116
70.70	35°33'	123°06'	X-3	0246	0301	497	61	61	123	123
70.80	35°13'	123°48'	X-3	0951	1006	499	27	27	54	54
70.90	34°53'	124°30'	X-3	1746	1801	519	21	21	40	40
73.60	35°18'	121°58.4'	X-2	1351	1406	530	18	18	34	34
77.50	35°04.5'	120°52'	X-1	2032	2044	471	42	29	89	62
77.55	34°54.5'	121°13'	X-1	2336	2351	559	79	79	141	141
77.65	34°34'	121°55'	X-2	0556	0611	504	31	31	61	61
440	38°05'	123°15'	IX-25	2313	2327	439	167	167	380	380
449	37°55'	123°05'	IX-26	0533	0544	368	52	52	141	141
451	37°55'	123°25'	IX-26	0218	0231	445	107	100	241	225
457	37°45'	122°55'	IX-26	1158	1207	305	15	15	49	49
459	37°45'	123°15'	IX-26	1452	1507	465	42	42	90	90
465	37°35'	122°45'	IX-27	0249	0257	296	4499	349	15225	1181
467	37°35'	123°05'	IX-26	2001	2016	576	73	73	127	127
475	37°25'	122°55'	IX-27	0751	0806	532	32	32	60	60
477	37°25'	123°15'	IX-27	1045	1101	522	23	23	44	44
480	37°15'	122°45'	IX-27	1748	1803	559	45	36	81	64
482	37°15'	123°05'	IX-27	1426	1441	506	37	37	73	73
503	37°05'	122°35'	IX-27	2157	2214	577	44	35	76	61
505	37°05'	122°55'	IX-28	0046	0101	564	125	55	222	98
509	36°55'	122°05'	IX-28	1322	1329	268	29	29	108	108
511	36°55'	122°25'	IX-28	0901	0916	554	40	40	72	72
513	36°55'	122°45'	IX-28	0436	0451	510	42	42	82	82
517	36°45'	121°55'	IX-28	1559	1611	409	42	42	103	103
519	36°45'	122°15'	IX-28	1841	1856	560	53	53	95	95
521	36°45'	122°35'	IX-28	2216	2231	582	68	68	117	117
527	36°35'	122°05'	IX-29	0501	0516	492	49	49	100	100
529	36°35'	122°25'	IX-29	0106	0121	590	91	82	154	139
534	36°25'	122°15'	IX-30	1131	1146	569	25	25	44	44
540	36°15'	122°05'	IX-30	1621	1636	562	58	58	103	103
549	36°05'	121°55'	IX-30	2111	2126	578	71	63	123	109
555	35°55'	121°45'	X-1	0051	0106	573	127	127	222	222
562	35°45'	121°35'	X-1	0451	0466	544	112	112	206	206
603	35°35'	121°25'	X-1	0956	1011	530	29	29	55	55
609	35°25'	121°15'	X-1	1346	1401	533	19	19	36	36
616	35°15'	121°05'	X-1	1651	1706	565	27	27	48	48

Plankton Volumes, Cruise XXX (continued)
Lines 80 through 100. Data taken on Scripps' Vessel "Paolina T"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.org. cc.
80.51*	34°26.7'	120°33.6'	IX-28	1046	1101	424	18	18	42	42
80.55	34°19'	120°49.3'	IX-28	1321	1336	595	38	38	64	64
80.60	34°08.3'	121°11'	IX-28	1646	1701	538	56	56	104	104
80.70	33°48.5'	121°49'	IX-28	2310	2325	644	167	167	259	259
80.80	33°25.5'	122°29'	IX-29	0540	0556	684	29	29	42	42
80.90	33°12'	123°11.5'	IX-29	1201	1216	585	15	15	26	26
80.100	32°49.5'	123°54.2'	IX-29	1832	1846	549	14	14	25	25
83.55	33°41.3'	120°27'	IX-28	0347	0403	653	71	71	109	109
83.60	33°33.8'	120°44.4'	IX-27	2302	2316	588	60	60	102	102
85.38*	34°00.6'	119°03.9'	IX-27	0523	0536	550	9	9	16	16
85.40	33°57.9'	119°10.7'	IX-27	0656	0711	605	26	26	43	43
85.50	33°40.4'	119°51.1'	IX-27	1306	1321	621	36	36	58	58
85.60	33°17'	120°33.5'	IX-27	1919	1936	689	49	49	71	71
90.28*	33°28.2'	117°46'	X-2	2347	0001	475	43	43	91	91
90.30	33°24.2'	117°55'	X-2	2117	2133	645	44	44	68	68
90.37	33°10.7'	118°22.7'	X-1	1605	1621	447	26	26	52	52
90.45	32°52.5'	118°55'	X-1	1021	1037	566	65	65	115	115
90.53	32°42.3'	119°30'	X-1	0511	0526	578	20	15	35	26
90.60	32°26.7'	119°58'	X-1	0025	0041	646	40	40	62	62
90.70	32°04.5'	120°39.5'	IX-30	1751	1806	646	29	29	45	45
93.27	32°56.3'	117°19.6'	X-3	0537	0551	535	19	19	35	35
93.30	31°50.4'	117°30.5'	X-3	0811	0826	532	15	15	28	28
93.40	32°29.2'	118°09.7'	X-3	1447	1501	557	52	52	93	93
93.50	32°07.8'	118°04'	X-3	2201	2218	513	20	20	39	39
97.30**	32°15.5'	117°09.2'	X-4	1834	1843	324	17	17	52	52
97.32	32°12.2'	117°17.2'	X-4	1637	1651	536	10	10	19	19
97.40	31°55.5'	117°50'	X-4	1122	1136	518	16	16	31	31
97.50	31°35.5'	118°30.5'	X-4	0445	0501	573	15	15	26	26
100.29*	31°41.8'	116°42.7'	X-5	0012	0026	542	67	67	124	124
100.30	31°40.5'	116°46.6'	X-5	0134	0149	591	40	40	68	68
100.40	31°21'	117°27'	X-5	0732	0746	562	36	36	64	64
100.50	31°02.3'	118°07'	X-5	1354	1413	566	57	57	101	101
100.60	30°42.9'	118°45.5'	X-5	2030	2046	605	24	24	40	40
100.70	30°24.4'	119°24.1	X-6	0302	0316	495	35	35	71	71
100.80	30°05.1'	120°03.5'	X-6	1017	1031	493	25	25	51	51
100.90	29°41.1'	120°47'	X-6	1716	1731	609	53	53	87	87

* - 100 meters of wire out
** - Less than 100 meters of wire out

Plankton Volumes, Cruise XXX (continued)
Lines 103 through 137. Data taken on Scripps' Vessel "Crest"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 100 C.M.strained	
							Total	Sm.org.	Total	Sm.or
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
103.30**	31°05'	116°25'	X-8	1448	1459	332	29	29	87	87
103.35	30°54.5'	116°45.5'	X-8	1221	1236	499	33	33	66	66
103.40	30°45.5'	117°05.5'	X-8	0924	0938	506	25	25	49	49
107.32	30°25.5'	116°12'	X-7	2257	2311	467	43	43	92	92
107.35	30°20'	116°23.5'	X-8	0106	0121	516	36	36	70	70
107.40	30°08'	116°48.5'	X-8	0416	0431	533	68	68	128	128
110.33**	29°49.5'	115°52'	X-7	1743	1754	353	90	90	255	255
110.35	29°47'	115°57.5'	X-7	1552	1606	468	31	31	66	66
110.40	29°36'	116°22'	X-7	1226	1241	564	136	33	241	58
110.50	29°13'	117°06'	X-7	0636	0651	480	16	16	33	33
110.60	28°53.5'	117°45.5'	X-7	0121	0136	502	18	18	36	36
115.27*	29°12'	115°03'	X-6	0548	0602	410	24	24	59	59
115.30*	29°08'	115°11'	X-6	0708	0721	430	77	77	179	179
115.35	28°55'	115°27.5'	X-6	1031	1046	475	32	32	67	67
115.40	28°45'	115°47'	X-6	1356	1411	482	31	31	64	64
120.25**	28°23'	114°15'	X-5	2239	2247	263	9	9	34	34
120.30*	28°13'	114°34'	X-5	2153	2206	420	36	36	86	86
120.35**	28°04'	114°54'	X-5	1718	1729	354	14	14	40	40
120.45	27°40.5'	115°34'	X-5	1226	1241	516	526	526	1019	1019
120.50	27°31'	115°52.5'	X-5	0811	0826	497	52	52	105	105
120.60	27°13'	116°32'	X-5	0246	0301	513	46	46	90	90
120.70	26°52.5'	117°10'	X-4	1936	1951	512	60	60	117	117
120.80	26°30.5'	117°48.5'	X-4	1501	1516	516	71	71	138	138
120.90	26°11'	118°27.5'	X-4	0947	1001	468	14	14	30	30
123.37**	27°24'	114°39.5'	IX-30	0659	0709	399	20	20	50	50
123.40	27°19'	114°52'	IX-30	0901	0916	506	45	45	89	89
123.50	26°58'	115°30.5'	IX-30	1556	1611	530	501	501	946	946
127.34**	26°55.5'	114°06'	X-1	0703	0714	372	30	30	81	81
127.40	26°45'	114°30'	X-1	0251	0306	526	79	79	150	150
127.50	26°24'	115°07.5'	IX-30	2241	2256	509	42	42	82	82
130.30**	26°29'	113°29'	X-2	1818	1829	295	82	82	278	278
130.35	26°24'	113°49'	X-2	2131	2146	422	65	65	154	154
130.40	26°16'	114°10'	X-3	0116	0131	490	38	38	77	77
130.50	25°55'	114°48.5'	X-3	0706	0721	505	492	492	975	975
130.60	25°31'	115°26'	X-3	1231	1246	507	108	93	213	183
130.70	25°08'	116°02'	X-3	1756	1811	457	53	53	116	116
133.25**	26°04.5'	112°48.5'	X-2	1318	1329	336	119	119	354	354
133.30	25°54'	113°07.5'	X-2	1007	1021	489	26	26	53	53
137.23**	25°35'	112°11.5'	X-2	0048	0059	263	97	97	369	369
137.30	25°21'	112°47'	X-2	0521	0536	470	31	31	66	66

* - 100 meters of wire out
** - Less than 100 meters of wire out

Plankton Volumes, Cruise XXXI, November 1951
Lines 60 through 97. Data taken on Scripps' Vessel "Crest"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 1000 C.M.strained	
							Total	Sm.org.	Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
60.55	37°48.5'	123°16'	XI-8	0638	0651	381	59	59	155	155
60.60	37°37'	123°37'	XI-8	0311	0326	501	111	111	221	221
60.70	37°17'	124°21'	XI-7	2111	2126	453	280	280	618	618
60.80	36°57'	125°06'	XI-7	1527	1541	778	130	123	272	257
60.90	36°53'	125°46'	XI-7	1111	1126	453	29	29	64	64
60.100	36°17'	126°30'	XI-7	0356	0411	432	326	304	754	703
63.52	37°19'	122°36'	XI-9	1410	1424	438	56	47	128	107
63.55	37°13'	122°49'	XI-9	1557	1610	390	43	43	110	110
67.50	36°48'	122°05.5'	XI-10	0643	0656	466	40	40	86	86
67.55	36°39'	122°26'	XI-10	0402	0416	431	85	85	197	197
67.65	36°19'	123°09'	XI-9	1036	1051	486	114	114	234	234
70.51	36°10.7'	121°46'	XI-10	1125	1140	486	15	15	31	31
70.60	35°53'	122°23'	XI-10	1557	1611	494	112	112	227	227
70.70	35°33'	123°06'	XI-10	2131	2146	452	143	143	316	316
70.80	35°13'	123°51'	XI-11	0252	0307	424	43	43	101	101
73.50	35°37'	121°17'	XI-11	1813	1826	403	389	15	965	37
73.60	35°16'	122°02'	XI-11	0112	0126	446	37	37	83	83
77.50	35°04.5'	120°52'	XI-11	2303	2316	422	35	35	83	83
77.55	34°54.5'	121°13'	XI-12	0154	0209	463	78	78	169	169
77.65	34°34'	121°55'	XI-12	0655	0709	453	57	57	126	126
80.51	34°25.5'	120°36'	XI-4	0521	0536	488	29	29	59	59
80.55	34°20'	120°49.5'	XI-4	0953	1008	508	28	28	55	55
80.60	34°09'	121°09'	XI-4	1347	1401	408	83	63	203	154
80.70	33°51'	121°51'	XI-4	2156	2211	466	46	46	99	99
80.80	33°29'	122°32'	XI-5	0657	0711	411	41	35	100	85
80.90	33°09'	123°13'	XI-5	1224	1237	415	32	32	77	77
80.100	32°49'	123°54'	XI-5	2111	2126	448	23	23	51	51
83.43	34°07.7'	119°31'	XI-3	2056	2111	501	42	42	84	84
85.38	34°04'	119°02.3'	XI-3	1743	1756	491	10	10	20	20
85.40	33°57'	119°11.6'	XI-3	1552	1606	472	36	36	76	76
85.50	33°38'	119°51'	XI-3	1021	1036	520	51	37	98	71
85.60	33°15.5'	120°31'	XI-3	0510	0524	447	49	49	110	110
90.28	33°28.5'	117°46.5'	XI-1	0326	0341	471	100	100	212	212
90.30	33°24.5'	117°54.5'	XI-1	0634	0648	475	21	21	44	44
90.37	33°10.5'	118°25.2'	XI-1	1035	1051	478	10	10	21	21
90.45	32°55'	118°56'	XI-2	0624	0638	460	43	35	94	76
90.53	32°39.5'	119°29.5'	XI-2	1121	1136	477	45	25	94	52
90.60	32°26'	119°58'	XI-2	1527	1541	449	13	13	29	29
90.70	32°06.5'	120°39'	XI-2	2050	2106	475	32	32	67	67
93.27	32°56'	117°19'	X-31	2210	2221	406	34	34	84	84
93.30	32°50'	117°31'	X-31	1941	1956	523	86	53	164	101
93.40			Not occupied							
93.50	32°14'	118°45.5'	X-31	1141	1156	534	22	22	41	41
97.30	32°15'	117°09'	X-30	1800	1809	284	10	10	35	35
97.32	32°11'	117°17'	X-30	1946	2001	508	76	76	149	149
97.40	31°55'	117°50'	X-31	0106	0121	529	37	37	70	70
97.50	31°39'	118°22'	X-31	0541	0556	473	19	19	40	40

Plankton Volumes, Cruise XXXI (continued)
Lines 100 through 137
Data taken on U.S.F&WS Vessel "Black Douglas"

Position			(1951)	Time (PST)		Vol. water strained	Displacement volume		Vol.per 100 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.org. cc.
100.29*	31°42.2'	116°43.4'	X-30	0837	0851	496	14	14	28	28
100.30	31°40.5'	116°46.5'	X-30	1004	1019	574	12	12	21	21
100.40	31°21'	117°27'	X-31	2333	2348	539	25	25	46	46
100.50	31°01'	118°07'	XI-1	0639	0654	544	32	32	59	59
100.60	30°41'	118°47.5'	XI-1	1251	1306	521	23	23	44	44
100.70			Sample lost							
100.80	30°01'	120°07'	XI-2	0207	0222	503	55	55	109	109
103.30**	31°05.2'	116°25'	X-30	1634	1644	359	10	10	28	28
103.35	30°55.5'	116°45'	X-30	1956	2012	552	35	35	63	63
103.40	30°45.5'	117°05.5'	X-31	1641	1656	529	33	33	62	62
107.32	30°25.8'	116°11'	X-31	0356	0411	550	37	37	67	67
107.35	30°20'	116°23'	X-31	0602	0617	514	115	115	224	224
107.40	30°10.5'	116°43.5'	X-31	1016	1031	514	24	24	47	47
110.33**	29°50.5'	115°52.2'	XI-3	2018	2029	379	45	45	119	119
110.35	29°46.5'	116°00'	XI-3	1703	1718	517	20	20	39	39
110.40	29°36.5'	116°19.5'	XI-3	1306	1321	503	21	21	42	42
110.50	29°16.5'	116°59'	XI-3	0651	0706	542	39	39	72	72
110.60	28°56.5'	117°39'	XI-2	2338	2353	535	43	43	80	80
115.27*	29°11'	114°55'	XI-4	0528	0541	507	49	49	97	97
115.30*	29°05'	115°08'	XI-4	0748	0801	467	175	175	375	375
115.35	28°55'	115°27.5'	XI-4	1056	1111	503	56	56	111	111
115.40	28°45'	115°47'	XI-4	1506	1521	514	7	7	14	14
120.25**	28°23'	114°14.5'	XI-5	0328	0339	360	15	15	42	42
120.30*	28°13'	114°34'	XI-5	0658	0711	412	20	20	48	48
120.35**	28°03'	114°54'	XI-5	1005	1016	329	14	14	43	43
120.45	27°43'	115°33'	XI-5	1529	1544	487	54	54	111	111
120.50	27°33'	115°52.5'	XI-5	2126	2141	479	19	19	40	40
120.60	27°13'	116°31.5'	XI-6	0606	0621	506	20	20	40	40
120.70	26°52.5'	117°10'	XI-6	1224	1239	481	18	18	37	37
120.80	26°32.5'	117°48.5'	XI-6	1914	1929	504	57	57	113	113
120.90	26°13'	118°27.5'	XI-7	0321	0336	507	36	36	71	71
123.37**	27°35'	114°51'	XI-11	0303	0314	374	30	30	80	80
123.40	27°25'	114°56'	XI-10	2206	2221	533	19	19	36	36
127.34**	26°55.3'	114°06'	XI-10	1109	1120	381	46	46	121	121
127.40	26°43.5'	114°29.5'	XI-10	1424	1439	503	25	25	50	50
130.30**	26°29'	113°29'	XI-9	0104	0114	355	48	48	135	135
130.35	26°19'	113°48.5'	XI-8	2131	2146	526	30	30	57	57
130.40	26°09'	114°07.5'	XI-8	1601	1616	489	23	23	47	47
130.50	25°49'	114°46'	XI-8	0936	0951	509	29	29	57	57
130.60	25°29'	115°29'	XI-8	0231	0246	501	62	62	124	124
133.25**	26°04.5'	112°48'	XI-9	0726	0736	343	30	30	88	88
133.30	25°54.5'	113°07.5'	XI-10	0031	0046	508	55	55	108	108
137.23**	25°34.2'	112°18.7'	XI-9	1358	1408	273	46	46	168	168
137.30	25°20'	112°45.5'	XI-9	1836	1851	491	33	33	67	67

* - 100 meters of wire out
** - 80 meters of wire out

Plankton Volumes, Cruise XXXII, December 1951
Lines 63 through 90. Data taken on Calif. F&G Vessel "Yellowfin"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol. per 1000 C.M. strained	
			(1951)				Total	Sm.org.	Total	Sm.org
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	cc.	cc.	cc.	cc.
3.52	37°19'	122°36.2'	XI-27	1814	1822	231	90	47	390	203
3.55	37°14'	122°49.5'	XI-27	2131	2146	544	143	143	263	263
7.50	36°49'	122°04.6'	XI-28	1558	1611	409	58	58	142	142
7.55	36°39'	122°26'	XI-28	1241	1250	313	14	14	45	45
7.65	36°19'	123°09'	XI-28	0506	0521	502	161	151	321	301
0.51	36°10.4'	121°45.7'	XI-28	2136	2151	436	80	80	184	184
0.60	35°53'	122°23'	XI-29	0246	0301	407	80	63	197	155
0.70	35°33'	123°06'	XI-29	0921	0936	473	44	37	93	78
0.80	35°13'	123°48'	XI-29	1601	1616	504	24	24	48	48
3.50	35°37'	121°16.6'	XI-30	1103	1114	383	40	26	104	68
3.60	35°18'	121°58.4'	XI-30	0401	0416	510	88	77	172	151
7.50	35°04.4'	120°52'	XI-30	1543	1555	393	19	19	48	48
7.55	34°54.5'	121°13'	XI-30	1843	1856	532	49	49	92	92
7.65	34°34'	121°55'	XII-1	0116	0131	431	77	77	179	179
0.51	34°26.5'	120°32.5'	XII-2	2018	2031	506	19	19	38	38
0.60	34°09'	121°09'	XII-2	1321	1336	507	48	48	95	95
0.70	33°49'	121°51'	XII-2	0516	0531	470	49	49	104	104
0.80	33°29'	122°32'	XII-1	2236	2251	498	63	63	126	126
0.90	33°09'	123°13'	XII-1	1641	1656	501	22	22	44	44
3.43	34°08'	119°34'	XII-3	0236	0251	539	71	71	132	132
5.38	34°01'	119°02.3'	XII-3	0615	0631	571	15	15	26	26
5.40	33°57'	119°10.5'	XII-3	0806	0821	586	6	6	10	10
5.50	33°37'	119°52'	XII-3	1256	1311	484	25	25	52	52
0.37	33°11'	118°23.5'	XII-4	1948	2001	588	57	57	97	97
0.45	32°54.5'	118°56'	XII-4	1041	1056	475	49	49	85	85
0.53	32°40.2'	119°33.5'	XII-4	0610	0626	632	19	19	30	30
0.60	32°25'	119°57.5'	XII-4	0151	0206	555	35	35	63	63

Plankton Volumes, Cruise XXXII (continued)
Lines 93 through 123. Data taken on Scripps' Vessel "Horizon"

Position				Time (PST)		Vol. water strained	Displacement volume		Vol.per 100 C.M.straine	
Sta.	N.lat.	W.long.	(1951) Date	Start	End	C.M.	Total cc.	Sm.org. cc.	Total cc.	Sm.or cc
93.27	32°55.5'	117°19'	XII-6	1548	1601	448	6	6	13	1
93.30	32°49.9'	117°32.2'	XII-6	1806	1821	566	42	42	74	7
93.40	32°31'	118°14'	XII-6	2311	2326	532	43	43	81	8
93.50	32°12.1'	118°56'	XII-7	0511	0526	530	28	28	53	5
97.30	32°15.1'	117°08.4'	XII-7	0000	0007	222	12	12	54	5
97.32	32°12.8'	117°21'	XII-7	2136	2152	Non quantitative				
97.40	31°53.5'	117°49.5'	XII-7	1611	1626	464	22	12	47	2
97.50	31°34.9'	118°31'	XII-7	1101	1116	598	26	26	43	4
100.29	31°42.6'	116°46.2'	XII-8	0411	0426	528	31	31	59	5
100.30	31°40.6'	116°46.8'	XII-8	0546	0601	562	27	27	48	4
100.40	31°21.3'	117°28'	XII-8	1016	1031	485	11	11	23	2
100.50	31°01'	118°07'	XII-8	1506	1521	481	23	23	48	4
100.60	30°41'	118°48'	XII-8	2021	2036	484	33	25	68	5
100.70	30°17.7'	119°32.4'	XII-9	0111	0126	522	52	24	100	4
103.30	31°02.9'	116°23.4'	XI-28	0441	0451	287	27	27	94	9
103.35	30°55.5'	116°45'	XI-28	0933	0942	447	6	6	13	1
103.40	30°46.3'	117°05'	XI-28	1331	1347	504	18	18	36	3
107.32	30°24.9'	116°12.4'	XI-29	0006	0023	560	23	23	41	4
107.35	30°20'	116°21.1'	XI-28	2211	2226	508	21	21	41	4
107.40	30°09.1'	116°43.9'	XI-28	1816	1831	506	76	76	150	15
110.33	29°50'	115°53'	XII-4	0705	0718	419	23	23	55	5
110.35	29°46.9'	115°59.8'	XII-4	0956	1011	495	22	22	44	4
110.40	29°37.4'	116°21'	XII-4	1231	1246	577	23	23	40	4
110.50	29°17'	117°01.6'	XII-4	1823	1838	482	16	16	33	3
110.60	28°58'	117°37'	XII-5	2346	0001	508	27	27	53	5
115.27	29°10.3'	114°58.7'	XII-3	1913	1926	370	42	42	114	11
115.30	29°07.5'	115°09.2'	XII-3	2108	2122	460	31	31	67	6
115.35	28°55'	115°27.5'	XII-3	1521	1536	468	22	22	47	4
115.40	28°45'	115°43'	XII-3	0936	0951	515	15	15	29	2
120.25	28°19.2'	114°16'	XII-3	0053	0106	400	28	28	70	7
120.30	28°13.4'	114°34.3'	XII-2	2218	2231	404	30	30	74	7
120.35	28°03'	114°54'	XII-2	1928	1941	396	17	17	43	4
120.45	27°41.6'	115°31.8'	XII-2	0336	0351	462	53	53	115	11
120.50	27°30.5'	115°45.6'	XII-1	1111	1126	463	33	33	71	7
120.60	27°13'	116°31.5'	XI-30	1756	1811	535	88	65	164	12
120.70	26°52.9'	117°10.1'	XI-30	0908	0924	546	27	27	49	4
123.37	27°26.5'	114°38.9'	XII-1	2112	2119	238	9	9	38	3
123.40	27°19.8'	114°50'	XII-1	1920	1928	352	23	23	65	6

Deep Tows taken during Cruises XXI - XXXII, 1951

Vessel and Cruise	Sta.	Position N.lat.	W.long.	(1951) Date	Time (PST) Start	End	Depth in Meters	Vol. water strained C.M.	Vol. per 1000 C.M. strained Total cc.	Sm.org. cc.
B-XXII	80.70	33°49'	121°51'	II-24	0053	0140	0-420	1450	132	59
B-XXII	80.100	32°49'	123°54'	II-23	0145	0231	0-416	1260	217	217
B-XXII	83.55	33°44'	120°24'	II-24	1939	2021	0-406	1342	125	125
B-XXII	93.30	32°50'	117°31.5'	II-17	2330	0016	0-421	1359	115	68
B-XXIII	80.55	34°19'	120°48'	III-23	0850	0932	0-418	968	75	75
B-XXIII	80.100	32°49'	123°54'	III-21	2348	0032	0-419	1462	101	101
B-XXIII	90.100	31°04.5'	122°40'	III-19	2219	2302	0-419	1312	42	42
C-XXIII	120.45	27°41.3'	115°33'	III-17	2004	2041	0-427	1154	54	54
B-XXIV	73.61	35°15'	122°02.5'	IV-9	0237	0321	0-410	1338	344	344
B-XXIV	80.60	34°09'	121°09'	IV-10	0127	0212	0-415	1407	113	113
B-XXIV	80.130	31°49'	125°56'	IV-12	0149	0232	0-419	1400	89	89
B-XXIV	83.60	33°34'	120°45'	IV-13	2227	2311	0-414	1437	164	164
C-XXIV	90.53	32°37.8'	119°27.5'	IV-17	0058	0142	0-345	1437	142	142
C-XXV	90.37	33°11'	118°23.5'	V-15	0507	0550	0-414	1224	156	156
C-XXV	100.30	31°39.5'	116°46.5'	V-9	2128	2212	0-406	1339	120	120
C-XXV	100.40	31°21'	117°27'	V-10	0441	0524	0-403	1227	107	107
B-XXVI	70.60	35°53'	122°23'	VI-13	2303	2347	0-410	1401	216	216
B-XXVI	77.55	34°54.5'	121°13'	VI-15	0455	0537	0-425	1292	111	111
H-XXVI	107.35	30°31.2'	116°25'	VI-13	0308	0352	0-415	1269	98	98
H-XXVI	110.110	27°16.4'	120°54.3'	VI-11	0406	0452	0-425	1374	21	21
H-XXVI	113.60	28°21.3'	117°27.5'	VI-7	0130	0216	0-388	1457	111	111
C-XXVI	140.35	24°35'	112°42.5'	VI-2	0319	0402	0-418	1174	1618	1618
C-XXVI	150.25	23°12'	111°01.5'	VI-5	2108	2152	0-410	1162	120	120
C-XXVI	157.10	22°33'	109°23'	VI-10	2233	2317	0-427	1175	126	126
B-XXVII	43.50	Non quantitative								
B-XXVII	50.110	37°40'	128°33'	VII-16	0100	0142	0-407	2176	43	43
B-XXVII	53.64	38°38'	124°44'	VII-13	2303	2352	0-408	(1558)	169	169
C-XXVIII	105.35	30°39'	116°33'	VIII-10	2109	2221	0-597	2554	41	41
B-XXIX	100.40	31°21'	117°27'	IX-6	2248	2331	0-419	1397	40	40
C-XXIX	140.50	24°05'	113°40'	IX-5	0037	0122	0-409	1396	19	19
C-XXIX	150.70	21°40'	113°48'	IX-6	2031	2117	0-401	1547	20	20
B-XXX	505	37°05'	122°55'	IX-28	0206	0252	0-428	1457	182	182
C-XXX	120.70	26°52.5'	117°10	X-4	2107	2147	0-390	1322	40	40
Y-XXXII	73.60	35°18'	121°58.4'	XI-30	0533	0616	0-352	1434	90	82
Y-XXXII	90.37	33°11'	118°23.5'	XII-4	2113	2157	0-332	1464	62	56
H-XXXII	115.35	28°55'	115°27.5'	XII-3	1552	1636	0-420	962	72	72
H-XXXII	120.70	26°52.9'	117°10.1'	XI-30	1038	1123	0-397	1474	46	43